

GLOBAL WELLNESS INSTITUTE

**2015 Global Spa & Wellness Summit
The Brain Skin Connection: Neurophilosophy and
Psychology, The Next Frontier
Claudia Aguirre, PhD, Neuroscientist & Mind-Body
Expert, U.S.**

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Neurophilosophy and Psychology, the Next Frontier

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FEMALE VOICE: I can't wait to hear this woman speak because it just sounds so fascinating what our skin can tell us about our brain. This woman is named Claudia Aguirre. She's a PhD neuroscientist and mind-body expert. She's a skin expert, specializing in the mind, body, skin connection. She consults regularly and is a professional speaker and writer for the health and wellness industries.

Let's find out more about our skin. Claudia?

CLAUDIA AGUIRRE: Okay. Let's figure this out. Welcome. Thank you, everyone, for having me here. I'm very excited to speak to you, the wellness industry is so interesting and important. And I'd just love to share a little bit of my background, my neuroscience, and see how that can influence your industry. But first, let's take a look at some stories to really get to know what this connection might be all about.

You don't have to know anything about this man to know that something happened to him between the first picture and the last picture on the left, where he is looking away. This picture actually forms part of a photography series by Claire Falici [phonetic], who is a Dutch photographer. And she took pictures of Dutch marines before they went to Afghanistan. So she took pictures of them before, which is your picture on this side of what is that, the right, your left, where he is not looking away.

In the middle, he was deployed to Afghanistan, and on the last picture he came back. This isn't years and years of war. This is one year. You can see the difference in his eyes. You can see the difference in his skin. You can see the hollowness around the eyes. He's looking away. The skin is also telling the story of the trauma that he has experienced. And it doesn't always have to be traumatized individuals that experience changes on the surface of the skin that inevitably are actually resulting changes inside, in his inner soul and his body.

Some other stories that show this, and these are all real

stories. These are real people. Some of these are actually patients of a particular psychologist in Boston who has treated a lot of people. This is Sophie. Sophie is a senior in high school, so as many seniors in high school, she's battling with a fact about her future, what is she going to do when she graduates? She is a dancer.

She is a ballerina and she's been a ballerina her whole life, but now she's thinking, "Do I want to continue dancing? Should I continue to be a ballerina? Should I try to be a professional dancer or should I go to college? And what do I do in college? Do I keep dancing? I don't know what to do." Interestingly, she develops a wart on the bottom of her foot. Now this wart comes and goes. Of course like most people that get skin conditions, they go to the doctor. And she goes to the doctor. She gets a cream. It goes away. It keeps coming back. She doesn't know how to deal with this issue. We'll get back to her in a little bit.

The next person is Jack. Jack is a pilot and he's a veteran pilot. He's been through it all. He has dealt with landing gear that doesn't work. He's dealt with wind gusts. He's a professional pilot, but every time he flies over a particular canyon, his forehead breaks out in herpes blisters, every single time he flies over this canyon and no other time. As Sophie, he also goes to the doctor to see what is this about? He gets his treatment, and it goes away, but every time he flies over that canyon it keeps coming back.

And finally, this is Danny. Danny was born with atopic dermatitis, eczema. So Danny is used to the medications. He's been through it all. But one day the medications stopped working. The medicine was no longer good. The day his mother tragically died in a car accident is when those medications stopped working. Now these were, again, real stories and these are real people that have gone to doctors, but traditional medicine was not able to treat them effectively because the source of the problem was never addressed.

It was only after Jack, and Sophie, and Bobby got different forms of help in a new field called psycho-dermatology which addresses the mind as well as the skin. And in order to treat the skin, you must first treat the mind. And so all of them actually came out with positive results. Sophie

actually underwent hypnosis, and through hypnosis and conversation, she was able to verbalize that she didn't actually want to dance anymore. And because she didn't want to dance anymore, her inner turmoil got resolved and the wart went away for good.

And Jack also did some hypnosis, and he found that actually, he was the one that was supposed to fly over the canyon one day, but he got sick so he called his friend. His friend went over that canyon and he died in an accident, so he crashed in that canyon. And the guilt and shame that Jack felt was so huge that his body showed it before he was even aware of it.

And with Bobby, of course, his mother's tragic death and untimely death was also a sign that he couldn't handle his emotions, but his skin was the first to reflect this. So in many cases, and many of you might even have personal experiences where your skin is sometimes the first to show the inner turmoil that goes on emotionally, psychologically in the body. And so this is really where the root of the connection between the mind and body are in the brain-skin connection.

So I, as I said, as you heard, I got my PhD in neuroscience when I was studying learning and memory, but actually when I moved into the skincare industry I learned just as much neuroscience by studying the skin as I had learned in studying the brain. So I hope, just in a few minutes, I'll give you a glimpse about then neuroscience and the neurobiology of skin. The skin tissue is being seen in the scientific world not only as a cutaneous tissue, but it's actually seen as a nervous organ, an endocrine organ, a self-organizing entity, and a social organ.

Now when it comes to sensitivity, a lot of you in the skin and spa world might think about that client, the client that comes in and says, "No, do not put anything on my skin. Everything burns. Everything tingles," are they crazy or is there something to this? So this is a research done on skin sensitivity and there actually is a neural basis behind this. A quick experiment was they added lactic acid which most of you know as a very good exfoliate, and lactic acid at a high concentration is obviously causing some skin tissue damage.

So they put it in to the nasal labial fold, and as the person

experienced just a little bit of lactic acid, they put them in an MRI machine. And the MRI machine got the signals about the activation in the brain. And so you can see on the right side the non-sensitive person. This is the kind of client that says, "You can put anything on me. I'm okay." The red indicates the level of blood activity, so this indicates the activation in the brain. And you can see that there is some activation in certain parts of the cortex.

Now when you look at the next section, on the left you've got your sensitive client. Notice the difference between the red zones? There is a clear neural biological difference between a person that says that they're sensitive, versus the person that says they're not that sensitive. We are just beginning to untangle the neuroscience behind skin, and how the skin is represented in the mind, and how the mind is then eventually represented on the body, in particular in the skin.

So you can see next time you have a client that says, "Well I do have sensitivity," it might not just be in their head. It might actually be there is a neurobiological basis behind this. And so in understanding this we can then better treat skin from a more holistic point of view. So in terms of the connection between the brain and skin, there is so much that's going on. And this is now only in the last 10 years or so that we're really uncovering the mechanisms that are found in skin that were once thought to be under the sole domain of the brain, for instance, the hypothalamic pituitary adrenal axis, HPAX. That is the stress axis in the body.

The fight or flight response activates first in the brain's hypothalamus, triggers a series of hormonal cascades, which then allows you to run away from that lion. Of course, we also experience this when we're just sitting in traffic. And Mexico has an amazing example of some traffic. So when you're sitting in traffic, that same hormonal activation happens, and this is known as stress. Now what's really interesting is that the skin, as an organ, has a stress axis all of its own, independent of the central nervous system.

What does this mean? This means that the skin produces its own hormones. Your skin produces all of the necessary hormones. It produces cortisol. It produces estrogens. It produces testosterone. So knowing that the skin has its own machinery that is separate from the nervous system, it's

actually going to shift the paradigm about how we actually think about the skin. Some of the other mechanisms in skin, forget your Apple watch, because the skin can also tell time.

So you know that you have a circadian rhythm in the brain, but every single cell actually has a clock, like a tick-tock mechanism. And the skin can tell time, which means that at night it knows that it's nighttime. It's going to do something different than during the day, so yes, your skincare regimen at night potentially should be different than skincare regimen during the day because less hydration happens at night.

The skin knows that it's day time, so it's going to build up its antioxidant defenses during the day, so you want to help the antioxidant defenses during the day. The skin is covered in all of these sensory nerves, covered in these kinds of mechanisms, and we've even found new senses in skin. Now this is not human skin. This is octopus skin and its beautiful array of colors is actually showing how octopus skin is activated by light. So we have found that the skin can see, in a way.

We have found that the skin can tell time. The skin can hear. Why are there hearing receptors in the skin? We don't know that yet, but one day we will find out. And there's all of these new discoveries about the skin, about the machinery of the skin that has really propelling us to shift the paradigm about what we used to think of skin as disposable and unimportant, and this translates not just into the biochemistry of what skin is and what neuroscience is, but actually translates in to something bigger than just skin.

One of the biggest senses I mentioned light is found in skin, sound, etcetera. One of the biggest senses that we have, actually in fact our first sense to develop in the womb is touch. That is the first sense to develop. Touch is incredibly important, not only for the individual but for society as a whole. If a baby does not this receive this gentle caress from a mother, a host of epigenetic changes will happen in that child as they grow up, but they will not be resilient to things like stress in the future and even illness.

And now this touch is actually a new discovery. There's a new fiber called a C tactile fiber. Now this was just

discovered only very recently. C tactile fibers not only respond to just gentle touch, and they're very, very critical about the speed at which they respond in the brain. You can't go too slow because it feels awkward, you can't go too fast because then it doesn't do anything. It's only found in hairy skin. It is not found in the palms of your hands or the soles of your feet.

So a massage, you're really triggering and activating these very specific nerve fibers, which is why it feels good. This kind of nerve fiber doesn't tell us that we have been touched. It tells us how we feel when we're touched, which is why sometimes it feels great, and by the same person at the same place, it does not feel great. We are wired for touch. This builds us as a society, and in the end we have our identity on our hands.

So we wear our identity on our skin and we've got to think about skin more than just the tissue that you want to regenerate, and exfoliate, and primp and pomp, and all of that. It is so much more than that. On its own, it's also a social organ and it is this gentle touch fiber that was just discovered that is really giving keys to this. And in fact, one of the theories behind autism is that these fibers are not tapping into that part of the brain, and actually the key to understanding autism might actually be in the skin.

And also with other diseases or disorders, like schizophrenia, when you become disembodied from your body, this part of the brain is activated. We are connected. And I mentioned trauma in the beginning. Now trauma is one very important way in which somebody can actually disconnect from their own body, but you can also trigger someone to disconnect from their body by actually stimulating a part of the brain.

Well it doesn't matter the part of the brain, but you stimulate a specific part of the brain and you can actually trigger an out of body experience, so these out of body experiences are real, and you can now artificially stimulate them. So what does this mean? We are our body and our body is in our mind, so we also need to remember to mind the body just as much as the body can mind the mind.

And to conclude, these are all very new scientific innovations that are coming out, and it takes time to reach

the non-scientific world. It actually takes time to reach the medical world. By the time a scientist has published some research and it's gaining steam, it's not for another 10, maybe 20 years before doctors in the medical world really gain a hold of it and can do something with it, maybe even longer. And then by the time a consumer or a non-clinician can actually do something about it, it's another 10 years.

So I'm giving you some ideas that are happening right now and about 20 years ago Dr. Michael Gershon [phonetic] found a brain in the gut, 20 years ago. Today, if you go to most health food stores, you would be hard pressed to find one that doesn't have probiotics. So I'm telling you today that there is also a brain in the skin, and how can this shift the industries that you are in today? How can it actually change ideas and other industries?

And that's what I love about this concept by Steven Johnson. It's called the hummingbird effect. The hummingbird effect says that an idea and an innovation in one field can trigger a completely new idea in a totally different field. Maybe we see a whole new area, where dermatologists actually are going to be psycho-dermatologists. Maybe the wellness industry is going to change and it's going to be something that's seen as incredibly important and valuable, where the health insurance industries will step up into it.

Who knows? Maybe the changes in technology might change. We might actually be able to tap in to our skin to hear better, which there is research behind that. We might be able to tap into the skin to this untapped neuroplasticity of the skin, to get a whole new sense that we might not have, like sensing infrared. So I would like to leave you with that, because for me, this change and these innovation in skin are only the beginning of what we're going to see. Thank you.

[END RECORDING]