

Skin and the Brain: Uncovering New Links

by Dr. Claudia Aguirre and Annet King (as seen in Skin Inc. Magazine)

While scientific research during the past century has focused on identifying and studying separate somatic structures, functions and conditions, the newest discoveries spanning many disciplines uncover more about relationships between the body's systems than the individual systems themselves. One area where this research is especially compelling is the ongoing dialogue between skin and the brain.



A Reflection of the Brain

In utero, both skin cells and brain cells develop from the same kind of embryonic tissue, called ectoderm. In the January 2012 issue of Proceedings of the National Academy of Sciences, researchers at the Stanford University School of Medicine in California conducting a study on mice were able to transform skin cells directly into brain cells, bypassing the stem cell stage, and further demonstrating this fundamental physiological link between skin and the brain.

Throughout life, the skin may be a reflection of changes within the brain, triggered by cascades of brain chemicals that have only recently started to be named and explored. For instance, the rise in adult acne may be linked to stress, which elevates both testosterone and cortisol levels. With natural aging, the decline of estrogen contributes to the loss of collagen and elastin, and the proliferation of hyperpigmentation – and these changes also affect the brain.

The Role of Oxytocin

Much has been written throughout the past several years about the role of oxytocin – a neuropeptide colloquially called the "love hormone" – relative to being touched. Oxytocin is a neurochemical produced by the brains of both female and male mammals. In animal studies, it is linked with lactation and pup recognition. In the human context, it may be the basis of much bonding, including sexual bonding. The touch that is experienced in a safe, nonthreatening context also releases other feel-good chemicals known as beta-endorphins.

Consider that very few recently divorced people say that they miss the wild, heart-pounding sex of their marriage; instead, they miss the comfy morning spooning, the hugs, the warmth and the familiar aroma of their former partner – in other words, the relaxed physical companionship of married life. In fact, a great deal of mammalian sexual expression may have more to do with oxytocin, which could be called the chemical basis of familial love, versus the simpler reproductive sex hormones of estrogen, progesterone and testosterone.

Body/Mind Collaboration

The rise of modern allopathic medicine has led to a tendency to segment and compartmentalize the body – and especially the mind – as if they are all disparate parts of a machine. This mechanistic view has been important and, in fact, necessary in order to classify diseases and establish research protocols in the modern sense. But what's intriguing from a scientific perspective these days is that some of the long-dismissed beliefs about how the body and mind work together now bear closer re-examination.

In today's era of medical specialization, it is easy to forget the beliefs of ancient healing traditions: All of the aspects of the body interact, although the current understanding of this interaction remains incomplete. For instance, in the practice of traditional Chinese medicine (TCM), the doctor would always look at the patient's tongue, reading its coating, color and texture. This holistic approach, including reading the skin for cues to internal health, is now inviting more serious consideration from even conventional Western medicine.

This may be the case in the area that is the top priority of every skin care professional: anti-aging. For instance, neurobiologist Douglas Fields, PhD, author of the book *The Other Brain* (Simon & Schuster, 2009), expresses the opinion that skin aging is not simply a cosmetic condition – it's a highly informative marker of internal aging and health, including brain health.

Chronic inflammation caused by immune system chemicals affects the aging process of the skin, especially in response to UV damage, and the aging brain, which loses plasticity in response to a decline in the biological processes of lipid synthesis, cholesterol synthesis and fatty acid synthesis. Fields states in a recent article in *The Huffington Post*, "Preventing premature aging of the brain may not be as easy as preventing premature aging of skin with sunscreen, but a careful look at your skin could tell you how well you are doing below the surface."

A Silent Voice

Skin care professionals often view human skin as a second, silent voice. Skin speaks. Skin tells a great deal about the person inside it. As skin care professionals, it is your job to learn the language of the skin: read it, hear it, interpret it and respond to it.

All professionals who touch human skin must become experts in sensing energetic messages. You must become empathetic, feeling what your clients feel. This aspect of the skin care profession is often mocked with words, such as "touchy-feely" and "warm and fuzzy." If these are criticisms, you should accept them with open arms.

Today's society is correctly described as touch-deprived. Three decades ago, John Naisbitt, author of *Megatrends: Ten New Directions Transforming Our Lives* (Grand Central Publishing, 1988), warned about the need for "high-touch" to offset the loneliness of the coming digital revolution and today, Faith Popcorn and other social analysts echo this concern. A century earlier, Victorian pediatricians noted what they called a "failure to thrive" among infants raised in state-run orphanages. The children were, to quote the

song in the film Mary Poppins, scrubbed and tubbed and adequately fed, but they were not cuddled or held.

Some people with certain neurological conditions, such as autism, as well as those experiencing post-traumatic stress disorder or other disorders, cannot stand to be touched. Clinicians of every discipline agree that the lack of skin-on-skin interaction intensifies their dysfunction. Although few suffer to this extreme, the widespread cultural lack of touch in a casual, social sense contributes to a sense of alienation and resultant stress, depression and an array of psycho-emotional disorders. This is a large reason why many clients visit skin care professionals – for an hour of the warm skin-on-skin contact they aren't getting elsewhere.

Energetic and Empathetic

Skin care professionals and massage therapists represent two of the few remaining professions on Earth where practitioners can touch the skin of clients. They devote many hours of study to the structure and function of the skin, conditions that affect the skin, actual skin diseases and, of course, the evolving spectrum of potential therapies and treatments. However, much of what makes you passionate about your work – and what therefore makes you successful in your business – is not clinically based. It is energetic and empathic.

Make an effort to touch the skin of every person who crosses the threshold of your skin care facility – no appointment needed, no makeup removal needed, no disrobing, no obligation to buy. Just touching the skin forms the basis of a tactile "map" in the neurons of a skin care professional. Feel for tension, gritty areas, tight areas, slick areas indicating excess sebum, hot areas signaling congestion and possible future breakouts, and more.

Can empathy be taught? Yes, but it helps if you're born that way. Most skin care professionals are born with a predisposition to want to connect with people. Otherwise, you would prefer a more isolationist profession. All of this places your work into clear context. Your job is not only to clear comedones or to break up Lactic Acid in overworked muscles as part of a sports massage. Your real hands-on job is to restore humanity, one skin at a time, through what once was called the laying on of hands. It keeps you human, and more humanity is what the world needs now.

Is there a Correlation?

Most likely, skin care clients who gaze in the mirror don't see their fine lines, wrinkles, loss of contour, loss of firmness and patches of hyperpigmentation as indicators of their brain health. But could there, in fact, be a correlation? And, to take an even greater leap, would protecting the skin from inflammatory assault also offer related protection to internal systems and organs, including the brain? Although further study is needed, many new findings, such as those included in this article, suggest that how radically and rapidly a person's skin ages, dictated by both genetic and lifestyle factors, may suggest how the brain is faring, as well. In this sense, youthful-looking skin may be indicative of far more than just another pretty face.