

From Neurons to Neighborhoods

Our experience of the world is constructed around the notion of the isolated self, and it is from this perspective that Western science has explored the brain. Yet, according to neurobiologist, Louis Cozolino, ([The Neuroscience of Human Relationships](#)), even though we cherish the idea of individuality, we live with the paradox that we constantly regulate each others' internal biological states. While most obvious in childhood and during intense states of love and bereavement, our interdependence is a constant reality of our existence.

Looking closely at the body, you will find layer upon layer of highly complex, interlocking systems. Further, you will discover countless individual cells (neurons in the nervous system) that differentiate and migrate to specific locations throughout the body. These cells, in turn, grow into an infinite variety of forms, organize into functional systems, integrate with other systems, and, ultimately, create an individual. Did nature use the same strategy to connect individual animals (humans) into a larger biological organism; a species?

It is a synaptic transmission that stimulates each neuron to survive, grow, and be sculpted by experience. These electrical and mechanical messages are received by our senses, converted into electrochemical signals within our nervous systems, and sent to our brains. The electrochemical signals generate chemical changes, electrical activation, and new behaviors, which, in turn, transmit messages back across the social synapse. The social synapse is the space between us. When we interact, could we also be impacting each other's internal biological state and influencing the long-term construction of each other's brains?

Studying the brain is like exploring a vast and ancient country with diverse landscapes, cultures, and customs. The brain's deeper significance is infinitely more complex than anything scientists have ever encountered. Like every living system, from single neurons to complex ecosystems, the brain depends on interactions with others for its survival. The brain is an organ of adaptation that builds its structures through interactions with others. There are no single brains.

“Our brains are built in the enigmatic interface between experience and genetics,” writes neuroscientist, Joseph LeDoux, “where nurture and nature become one.” At first genes serve as a template to organize the brain and trigger critical and sensitive periods; later, they orchestrate the ongoing transcription of experience into genetic material. Through the biochemical alchemy of template and transcription genetics, experience becomes flesh, love takes material form, and culture is passed through a group and carried forward through time.

When good-enough parenting combines with good-enough genetic programming, our brains are shaped in ways that benefit us throughout life. We are just as capable, however, of adapting to unhealthy environments and pathological caretakers. The

resulting adaptations may help us to survive a traumatic childhood but impede healthy development later in life. Our parents are the primary environment to which our young brains adapt, and their unconscious minds are our first reality. Because the first few years of life are a period of exuberant brain development, early experience has a disproportionate impact on the development of neural systems. In this way, early negative interpersonal experiences become a primary source of the symptoms for which people seek relief in psychotherapy.

Caregiver nurturance sets us on a course of physical and psychological health – or, when it is lacking, disease and mental illness. Because of the link between interpersonal experiences and biological growth, we are particularly interested in the impact of these early caretaking relationships when the neural infrastructure of the social brain is forming. We know that the brain is capable of change at any time and that social interactions are a primary source of brain regulation, growth, and health. Friendships, marriage, psychotherapy – in fact, any meaningful relationship – can reactivate neuroplastic processes and actually change the structure of the brain.

As a therapist, I am especially interested in how relationships reshape the brain throughout life. I have watched as my focused attention, consistency, and caring have been taken in like water at a desert oasis. I have experienced the gradual building of confidence and strength as my presence has been integrated and used as a source of security, guidance, and emotional safety. I have also experienced how working with my clients has changed me, inspired me, and helped me to grow. It is the power of being with others that shapes our brains.