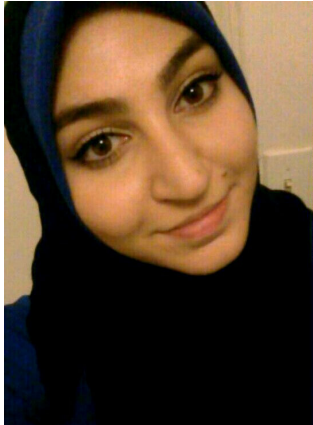


# ***The Neuroscience of Human Relationships: Attachment and the Developing Social Brain***



Written by Louis Cozolino, PhD

Reviewed by Mona Zohny

**In 2006, Louis Cozolino**, a therapist and professor of psychology at the Pepperdine University, published the first edition of his book, *The Neuroscience of Human Relationships*. Since then, the field of neuroscience has expanded immensely. As a result, Cozolino has published a second edition, which contains much of the same content and more. It follows the same format as the first edition while integrating contemporary research with existing knowledge of the social brain.

**This book** is designed for psychotherapists and any other professional interested in applying neuroscience to their practice. In this book, Cozolino “interweave[s] science and experience in an effort to expand our understanding of human relationships”. He does so by focusing on the “flow of information between individuals across the social synapse” (p. 13).

**The introduction begins** by pointing out that “humans exist within a paradox: we conceive of ourselves as individuals yet spend our lives embedded in relationships that build, shape, and influence our brains” (xiii). The rest of the book then focuses on explaining in great detail how human interactions affect the brain, and vice versa. Cozolino explains the concept of the “social synapse”, which he defines as “the space between us . . . filled with seen and unseen messages and the medium through which we are combined into larger organisms such as families, tribes, societies, and the human species as a

whole” (p. xv). Each part consists of two to four chapters. At the end of each chapter, Cozolino provides a narrative based on his experience with clients that serves to illustrate the concepts discussed throughout the chapter.

## **Part One**

**Chapters One and Two** emphasize the importance of viewing the brain as a social organ. Cozolino focuses on the evolution of the social brain as a method of survival. He points out that, unlike many organisms that are born with skills they use directly to survive, human babies “survive based on the abilities of their caretakers to detect the needs and intentions of those around them” (p. 7).

## **Part Two**

**In chapters Three through Five**, Cozolino focuses on describing the various structures and functions of the social brain. Labelled diagrams of the brain are provided. He discusses the development of the brain over the human lifespan and describes the behaviors associated with the different developmental levels. Cozolino also explores the benefits of the lateralization of brain functions across the right and left hemispheres in humans. He points out that this specialization of hemispheres has led to an increase in “neural ‘real estate’ for the development of new skills and abilities” (p. 63).

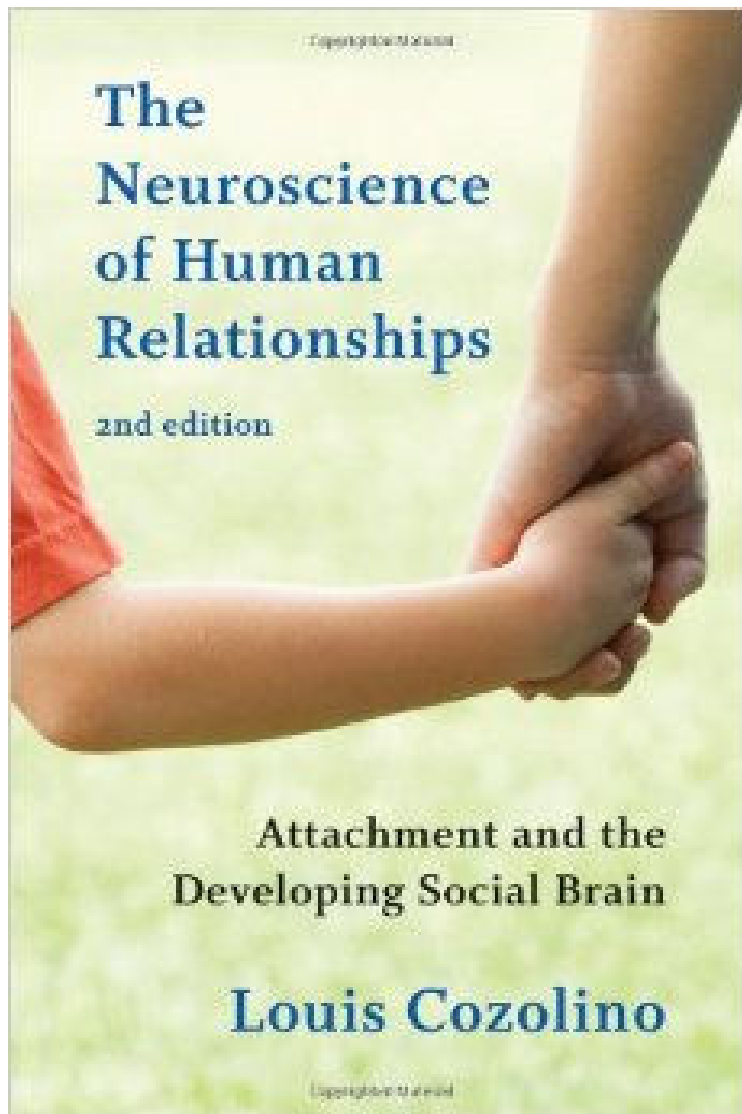
### Part Three

**Chapters Six through Ten** focus on the social synapse especially in terms of primal forms of communication such as instincts, reflexes, sights, sounds, and smells. Cozolino starts by discussing the relationship between parent and child and how the brains of both a newborn and mother are shaped by their interactions with one another. He also explores the concept of love as a biochemical and social process. In Chapter Ten, he emphasizes the importance of a healthy attachment or bonding experience with one's mother as an infant. He describes the "transduction of interpersonal experience into biological structure" (p. 151). He points out that amygdala activation correlates with the level of attachment insecurity in stressful situations. The brains of insecurely attached people, for instance, have immature social engagement systems and as a result resort to the more primitive fight-or-flight system in relationships. However, Cozolino presents the concept of attachment plasticity. Research suggests that attachment in adults is a "malleable form of implicit memory," which is good news for therapists treating patients with attachment issues (p. 155).

### Part Four

#### "I See You"

**Chapters Eleven to Fourteen** cover various concepts related to the relationship between social communication and vision, such as gaze, facial recognition, mirror neurons, resonance, attunement and empathy. In Chapter Eleven, Cozolino addresses the importance of gaze in an evolutionary context. He discusses the use of other people's gaze to redirect our attention and gather information from our environments as well as the preference for dilated pupils, which are linked with empathy. Chapter Twelve focuses on the importance of facial recognition and the brain structures and functions involved in this process. He distinguishes between the visual and emotional component of recognizing a familiar face when discussing the conditions of prosopagnosia (the inability to recognize a face, while still getting the feeling of familiarity) and Capgras syndrome (the feeling of unfamiliarity when seeing a face one recognizes). Chapter Thirteen is about mirror neurons. Cozolino focuses on the evolutionary benefits and addresses the brain structures involved in the mirror neuron system. The discussion of mirror neurons continues in Chapter Fourteen, which covers resonance, attunement and empathy and the role that the brain, specifically the insula cortex, plays in these processes.



### Part Five

**Cozolino explores** the effects of both positive and negative relationships on physical and mental health. Chapter Fifteen is about the regulation of the brain, as well as physiological health by relationships. He presents Cozolino presents statistics that show that people in positive relationships fare better physically than single people. In addition, the loss of a significant other increases the risk of developing health problems. Negative relationships, specifically bullying, increase cortisol levels, which can affect the functioning of the hippocampus. Chapter Sixteen is about early trauma. Cozolino begins this discussion at the prenatal stage by addressing the effects of the mother's psychological state on the fetus. Maternal depression after birth may lead to neglect, which affects the child's neurological development. Research shows that maternal behaviors may affect gene expression in their offspring. Cozolino then discusses the neurological structures involved in the stress response. Chapter Seventeen is about interpersonal

trauma. Cozolino discusses approach-avoidance behavior as a result of an incident that leads to feelings of mistrust in a client. He addresses child abuse, neglect and shame. He talks about the effect of “sustained stress” on the hippocampus. Damage to the hippocampus affects explicit memory, which means that, while the amygdala will store the implicit memory of a stressful event, the hippocampus may not be able to and so the client may not be able to remember why s/he is afraid.

## Part Six

**In this section,** Cozolino explores various disorders of the social brain. Chapters Eighteen through Twenty-One discuss social phobia, borderline personality disorder, psychopathy and autism, respectively. In each chapter, Cozolino defines the features of each disorder and describes the differences in brain structure and development in clients with these disorders.

## Part Seven

### “Social Neural Plasticity”

**This section consists of** Chapters Twenty-Two to Twenty-Five. Chapter Twenty-Two is about the development of the self and the theory of mind. In Chapter 23, Cozolino describes the three messenger systems of neurons and compares them to the three messenger systems of human interaction. He discusses the importance of narratives in psychotherapy, since storytelling involves the integration of many neural pathways. Cozolino lists several ways that neuroscience can “advance the practice of psychotherapy”: (1) the brain can be impacted in many ways so a brain-based approach can aid in creating a common rationale amongst professionals in determining a treatment for clients, and educating clients about their brains will “depathologize’ their experience” (p. 396); (2) the optimism and belief in plasticity may have healing benefits so that using storytelling as a way to modify memories and understand the effect of the therapeutic relationship on positive change. It is evident in many of the narratives he tells throughout the book that these are views and suggestions that he implements in his practice as a therapist. Chapter Twenty-Four is about the importance of a loving therapeutic relationship since a client enters the room with the expectation that they will be treated as they are by others in their life. In Chapter Twenty-Five, Cozolino addresses the concept of ‘group mind’. He discusses the Japanese belief that mental health stems from the idea that a person must be receiving and giving care to others. He suggests that our individualistic values in the West are one of the reasons behind the higher incidence of mental illness in our society.

***The Neuroscience of Human Relationships*** is a fascinating and readable book that adequately covers the latest research in neuroscience regarding the social brain. The narratives provided are helpful in understanding the application of neuroscience in the clinical setting. The reader will certainly come away with a “deeper appreciation of the complexity and importance of our interactions with others, especially those closest to us” (xv).

**Mona Zohny** is currently a senior at Hunter College where she is pursuing a B.A. in Psychology with a minor in English. She will be completing her undergraduate thesis project regarding self-efficacy, social support, and college adjustment in first-generation college students in the spring. She is also serving as a Helpline intern at the National Eating Disorders Association. Mona is interested in clinical psychology and hopes to continue her studies at the graduate level.

