

reviewed by Kristina Lerman

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What's Going on in There: How the Brain Develops in the First Five Years of Life
by Lise Eliot, PhD

This book belongs to a very distinguished class - a popular science book that is a real page turner. I literally could not put it down until I was too bleary eyed to stay awake. This is not so much a how-to-parent book, as a pop science book that explains how a baby's brain develops from conception through the first few years of life. Of the several main claims to which the author returns again and again, the most important one is the critical role experience (and thus environment) plays in shaping the brain. Although I knew of the link before, I was surprised to learn just how important early experience is. A baby is born with (almost) all of its neurons, but very few connections between them. The baby spends first few years (especially the first two) growing these connections, called synapses – many millions A SECOND - and also busily pruning them. Only those synapses that are stimulated by experience or practice will be preserved – the rest will be eliminated. All of our experiences, knowledge and understanding are encoded in the brain by a pattern of synapse strengths. The second point of the book is that the brain matures in phases, from the back of the brain, where the senses are perceived, to the front, where emotions and reasoning reside. Each part has a critical period of growth and myelination¹. If repeated experience is not provided during the critical period of some portion of the brain's maturation, it will forever lose its functionality. Thus, for example, the auditory portion of the brain of deaf babies is not wired for hearing at all. Instead, it responds to visual stimuli. This is true not only of the senses (5 senses + vestibular system and motor skills) but also of language, emotion and reasoning skills.

The back-to-front maturation of the brain also explains why babies achieve their milestones in a certain progression - which was always a mystery to me. The chapters on emotion and language are especially fascinating, albeit too brief. For example, did you know that the baby first starts being able to feel emotions around 6 months? That's when frontal lobes start maturing. This is synchronized with the motor development - baby begins to experience attachment and separation anxiety right around the time it begins to crawl (so as not to get too far from mommy)! It also explains why toddlers use nouns (telegraphic speech) first, and grammar much later, and why they are so (infuriatingly) slow - they should speed up as myelination of the brain progresses, through the first years of life.

The book offers a very coherent discussion of sex differences in the brain, physiological basis for temperament, and what can be done to override its negative aspects (such as an overly fearful child), genetic basis of intellect, etc. All ideas and arguments are convincingly presented, backed by experimental findings, not only on humans but on other species as well. The practical message was the one you already know and undoubtedly practice – stimulate your child – but the book explains well why this is

¹ Myelin sheath is the fatty substance around the neural connections that helps speed up signaling among neurons and between neurons and the rest of the body.

necessary and why most parents instinctively know to do this. Still, there are a few things parents can do to give their child a developmental edge - talk, talk, talk to the child, practice attention and memory skills, talk, challenge the child to overcome negative emotional traits, talk some more.