

## **BLOG from Penelope Leach**

An intriguing and fascinating account, from Penny, of the extraordinary journey of the baby's brain from conception to age 2 – read on !

### **Building Babies Brains**

Almost all of the growth and development of a new person's brain takes place between conception and a baby's second birthday. These first 1001 days of life, covering foetal development, infancy and toddlerhood, are often referred to as "critical" because optimal brain development throughout that period gives a baby the best possible start in life while suboptimal brain development prevents it.

Most people have always assumed that how a baby's brain develops and forms the connections and interconnections that make it "work" depends on a combination of physical growth and maturation and the genes passed on by the parents. But recent international research findings tell a very different story. These findings are difficult to take in, even hard to believe, because they are counter-intuitive. They make it clear that rather than “just happening” infant brain development depends on interactions between his genes and his environment, and since a baby's environment is made up of the social and emotional experiences he gets from his relationship with his mother or, after birth, with whoever serves as his "primary caregiver". Parents, or people who stand in for parents, actually build babies brains!

#### Mothers matter most at first

An infant's first environment is his mother's womb. Her body is building her baby and in the first three months the foetus shares pretty well everything that affects her physically or emotionally, both bad and good. That's why it is in these earliest stages, often even before a woman knows she is pregnant, that there's the highest risk to the developing baby of ill effects from drugs or dangerous chemicals the mother may take, infections she may suffer from and so forth.

In the second trimester the placenta is complete and filters out a lot of potentially harmful substances, but not all. If there's a high level of alcohol in

your bloodstream because you have been drinking, the placental barrier will not prevent alcohol getting through to your baby. We don't know exactly how much alcohol, how often, will do how much damage to a particular child, but the danger is proven.

It is not only substances mothers take into their bodies that may cross the placenta and do a baby harm. A mother's feelings and emotions may similarly produce chemical changes in her bloodstream that reach the foetus such as high levels of stress hormones, such as cortisol, if she is feeling very anxious. Generations of women all over the world have talked about babies being influenced by their mothers' moods and feelings. It used to be thought that this was a post-birth phenomenon; that if women were depressed and/or anxious in pregnancy they became over-anxious others and this affected their babies. This is the first generation to have scientific evidence of a different story: Anxiety, depression and many types of stress affect babies while they are still in the womb and matter to their development whatever happens at or after the birth. Developing foetuses and their brains receive complex biological signals from the mother; signals which can be affected by her emotional state. Maternal stress can affect the function of the placenta allowing more of the stress hormone, Cortisol, to reach the foetus and change the development of the brain and perhaps the epigenetic makeup which dictates which genes are turned on or off, when and/or by how much. Occasionally a baby's long-term development may actually be altered in a process known as "foetal programming" Such infants have a lifelong extra risk of a range of problems from being liable to anxiety or depression themselves, to being slower at learning, having symptoms such as ADHD and even having some physical problems such as asthma. So, the less stress there is for you in pregnancy, the better for your baby.

Many potentially damaging stressors have been identified, including anxiety about being pregnant and/ or about the wellbeing of the foetus; general anxiety; depression, with or without anxiety; spousal discord or cruelty; having; involvement in natural disasters or living in a war-zone; life events, such as bereavement; daily hassles, such as problems with neighbours or being bullied at work. There is no suggestion that going out to work is a damaging stress in

itself although of course a job in which a woman is unhappy may be highly stressful.

Studies have shown that even when the acuteness or duration of a stressor is allowed for some of these types are more likely than others to damage the quality of that intra-uterine environment, especially worries about the pregnancy itself and the coming baby's wellbeing, and problems in the relationship with the father. These can affect development in the womb and may even increase the (small) chances of the baby being of low birth weight; having reduced scores on developmental tests and a range of behavioural difficulties in childhood.

Nobody's life is stress-free but the least stressful pregnancy possible is clearly a mother's right and a father's duty, because it is an obligation to their child. Don't let the Idea of "spoiling yourself or "being spoiled " come into your mind. Nobody else can tell you what will make you feel relaxed and contented during the next few months, but whatever it is, go for it.. Don't let the Idea of "spoiling yourself' or "being spoiled " come into your mind. Nobody else can tell you what will make you feel relaxed and contented during the next few months, but whatever it is, go for it. Sarah's sister and she were both pregnant at the same time but two women couldn't have reacted more differently. "My sister went part-time at work, let herself off (or got her husband to let her off) lots of minor irritants in her life - like a long drive every Sunday to have lunch with in-laws she didn't get on with, and cooking from scratch every night and twice at weekends - and gave herself little treats like regular hair and nail "do's". I took a course that set me up for promotion at work; built up my relationship with my husband's parents and persuaded him that it was time to put in a new kitchen and sort out the garden. Her life would have bored me; mine would have exhausted her.