

## **References for Grow Your Baby's Brain**

Dr Nils Bergman, September 2011.  
There are five chapters, identified with larger text in the film, and here with capital letter in the order they appear. Following each is a number in brackets, and a brief annotation. The actual reference appears in the same numeric order at the end.

### **ANNOTATIONS**

#### **A. BRAIN GROWTH INSIDE MUM**

- (1) “Cells that fire together, wire together” - and those that don’t, won’t.  
Carla Schatz describes this in fetal kittens
- (2) Rima Shore is quoted from a book, available Amazon, more is available also on the internet McCain and Mustard: [www.pcfk.on.ca/PDFs/Research\\_Ken/ReversingBrainDrain.pdf](http://www.pcfk.on.ca/PDFs/Research_Ken/ReversingBrainDrain.pdf)
- (3) Marks et al review REM - Rapid Eye Movement – sleep specifically.  
REM sleep is a part of Active Sleep phase makes “spontaneous synchronous firing”.
- (4) Graven summarises the importance of sleep and sleep cycling on brain wiring in the context of preterm infants, including the role of the amygdala and the hippocampus.
- (5) Peirano provides a review of the role of sleep and sleep cyclicity in brain development.

#### **B. BRAIN WIRING AT BIRTH**

- (6) Lagercrantz first described this in 1977, the reference provided here is a later version.
- (7) Lind researched this 60 (!) years ago , with dramatic X- ray pictures.
- (8) Schore summarises positive development in an extensive review this being part 1, part 2 is reference 12.
- (9) Hofer showed how specific sensations have specific influences in the newborn, all of which ensure “regulation”; and the term “hidden regulators” implies there are many we do not know or understand, but that are still provided in the right place.
- (10) Uvnas Moberg provides here a summary understanding of oxytocin to a lay audience.
- (11) Porges has proposed a Poly-Vagal Theory, built on understanding of autonomic nervous system control of the heart and body. An important aspect of this’ in the context of this film, he calls “neuroception”, which we translate as the capacity to determine “Am I safe?” or not.
- (12) Schore, part 2 from reference 8, summarises and reviews work of many others; the concept of left sided approach and right sided avoid orientation is described by others in more detail. This should not be confused with “right brain” and “left brain” differences, though can seem paradoxical.

(13) Widstrom and colleagues (including Righard) first described the self-attachment behaviours in the 1980's, this reference is the most recent update.

(14) Righard has produced a short video of the self-attachment behaviour, available [www.geddesproduction.com](http://www.geddesproduction.com) .

(15) Doucet shows nicely how the smell of the secretion from Montgomery's tubercles has a highly specific effect on the newborn, and this may work just like one of the "regulators" Hofer (reference 9) describes. The concept of a "critical period" is firmly established in neuroscience, though somewhat glossed over and watered down by others!

(16) Bergman, with midwife Agneta Jurisoo first described a safe technique for managing very low birth weight newborns, which is described in detail here, article may be hard to find, but detail also described in "Hold Your Prem" by Jill Bergman, available at [www.kangaroomothercare.com](http://www.kangaroomothercare.com)

### C BREASTMILK AND BREASTFEEDING

(17) Hanson first described secretory IgA, that coats the mouth and stomach, this book goes into greater detail with much more information on other substances as well.

(18) McNeilly measured prolactin and oxytocin at the same time, showing that only prolactin responded reliably to suckling.

(19) Uvnas-Moberg and colleagues described in more detail relationships between oxytocin and suckling.

(20) Leng describes the effects of oxytocin on different parts of the hypothalamus and other parts of the brain, including the diminished fearfulness, and early bonding around the time of birth.

(21) Weller and Feldman describe role of cholecystokinin, which seems not that much studied.

(22) Swain and colleagues describe the brain circuitry involved in parenting and in the baby.

(23) McCain and Mustard present this work as a report in Canada – summarising much of the neuroscience described here.

(24) Ainsworth defined different forms of attachment, building on the work by Bowlby.

(25) Caspi and colleagues conducted a study showing that breastfeeding AND the presence of the FADS2 gene were required to make a difference to intelligence.

### D SEPARATION AND STRESS

(26) Martin-Calama conducted a study in Brazil, where exclusive breastfeeding is very common, where the single dose of glucose on the first day reduced breastfeeding rates months later.

(27) Bigelow showed that the more skin-to-skin contact the mothers experienced with their newborns in the first day of life, the more emotional sensitivity they showed to their babies, many months later. Their ability to help their child with a new toy was also enhanced.

(28) Shonkoff has chaired the work of a huge research collaborative, and this can be found on the internet, as well as a book: *From Neurons to Neighbourhoods* (see reference 39). The reference here is easy to find. The concepts of positive, tolerable and toxic stress come from here, as well as the phrase “buffering protection of adult support”.

(29) Teicher describes the changes in the brain produced by stress, with the concept of adaptation and maladaptation leading to future vulnerability, rather than current damage.

(30) McEwen provides a theoretical basis for understanding the short term and long term effects of stress, with “allostatic load” leading to wear and tear of systems that lead to breakdown in the future.

(31) Meaney has described in detail the exact mechanism whereby cortisol and stress changes gene expression, that in turn alters behaviour and health effects along the life span.

(32) Barker first put forward a hypothesis of “fetal programming”, which is now also the field of epigenetics. The DNA is sensitive to early environment, starting soon after conception, and all along the developmental time scale.

(33) Stettler describes a large study whereby it was shown that the amount of weight boys gained in the first week of life predicted their obesity after the age of 30 years, an example of early life programming. The inference of large feeds and long intervals contributing to this is my own.

(34) Ludington-Hoe describes the effects of crying in good detail

(35) Als developed NIDCAP – the Neonatal Individualised Development Care and Assessment Program – and much of the supportive care described here comes from her work, including the quote: “Behaviour of the infant is its way to communicate”

## E EARLY PARENTING

(36) Erlandson describes both technique and effects of skin-to-skin contact with fathers.

(37) Storey and colleagues describe hormonal changes and fathering behaviours.

(38) Cook has made this book free for download from the internet. The focus is on the importance of mothering, but with a section emphasising the vital role fathers also play.

(39) *Neurons to Neighbourhoods* provides a broad overview of the neuroscience as well as the social and political implications.

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