

# Parenting Before Birth

Love and bonding from conception to birth  
– and why it matters for your baby and family

*'You are a brain shaper, a life shaper. Your role as a loving, powerful parent begins long before your baby's first cry or smile.'*

*Frederick Wirth, M.D.*

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## At a Glance

**Your baby's experiences before birth influence the way he or she will perceive love and life, as a baby, as a child, and as an adult.**

**On a Babiesknow course we explore development in the womb; and how expectant parents can positively support their children during life's most influential stage.**

**This article reveals the important facts about life in the womb**

- o Experiences now influence development and gene expression, with an impact for life.
- o Bonding in pregnancy has positive long term effects.
- o Your emotions – as a mother – have an impact on your baby in pregnancy.
- o Dad has an influence too.
- o Raising your happiness and reducing stress is really positive for your baby.
- o Now is your golden opportunity to have a positive influence.

What we are sharing is both cutting edge neuro-science and age-old wisdom. On one hand it expresses the most intricate and complex neuro-physiology, and on the other hand it's as simple as a cuddle. We aim to shed light on pregnancy: and why the way you relate to your baby really does matter to your baby's health and happiness, far into the future.

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## Some myths and facts

We all inherit beliefs about babies and parenting. Many are useful, but some, despite being widely held, are not true. They are like myths that are influential – but when dispelled allow for positive action. You can find out more on each of the ‘myths’ and facts below by following the links.

### Myth

Your baby is born as a blank slate and begins to form her personality after birth.

Bonding begins after birth.

Your emotions don't affect your unborn baby.

Stress is just part of life. Your baby will thrive whatever's happening to you.

Dad's relationship with his baby begins after birth.

What happens to us as babies has no impact on the way we parent.

### Fact

Your baby has emotional feelings throughout pregnancy. What she experiences now influences her feelings and behaviour after birth, and her physical development. [More](#)

Bonding begins in pregnancy. A baby who feels wanted and secure before birth tends to bond well and become securely attached. This lays down a foundation for loving relationships throughout life. [More](#)

Your emotions influence your baby throughout pregnancy. [More](#)

High maternal stress can be very damaging for a baby in pregnancy. And there are many ways to reduce and prevent stress. [More](#)

Dad and baby can bond during pregnancy; your baby will recognize you from birth if you have been present during pregnancy. [More](#)

Our earliest experiences impact the way we relate to our babies, and our partners, and the way we parent. [More](#)

## A new view point: nature or nurture?

Since the spotlight of science has been focused on genes, popular belief has been that we each come into this world equipped with a unique set of personal genes, determined at conception.

The common belief is that genes determine how we develop, like a blueprint or code that will inevitably unfold. New scientific discoveries, however, reveal that this is a misunderstanding: the fact that we have certain genes doesn't mean they will inevitably cause actions within our bodies - the environment plays a key role. The new science of epigenetics reveals that many of our genes are triggered to express themselves (or prevented from expressing themselves) by environmental factors (e.g. diet, stress). According to Bruce Lipton, Ph.D., approximately 40% of our genes are able to transform (i.e., transcription) in reaction to our environment throughout our lifetime.

This information is the key for parents – because the environment we offer our babies in pregnancy has lasting consequences. It is not a question of 'nature or nurture'; it is nature *via* nurture<sup>i</sup>.

### Your baby's environment in pregnancy

In pregnancy your baby's environment affects the way your baby's cells function, adapt and learn, and the way many genes express themselves as cells are multiplying and your baby's organs form and develop. This includes brain development.

What is in your baby's environment that impacts her?

- **Amniotic fluid**
- **Placenta**
- **Your blood chemistry** – including hormones, oxygen, nutrients, vitamins, minerals, etc.
- **Sound** – your and your baby's hearts, blood flow, your voice, other voices, song, music, etc.
- **Movement** – how you move around, e.g. walking, jolting, rhythmic, dancing, being still
- **Temperature** – related to your body temperature
- **Toxins** – depending on your exposure; for instance, nicotine, lead, excessive sugar, amphetamines, alcohol, high levels of stress, depression, etc.
- **Mum's emotions** – which influence your baby's moods and brain development (more)

### Your baby's needs in pregnancy

At Babiesknow we believe that every person has fundamental needs: Love me, hold me, feed me, hear me, see me<sup>ii</sup>. These support health and happiness.

One of the main aims of Babiesknow is to support parents to be able to meet their babies' needs throughout pregnancy. The benefits for babies are enormous.

We're here to help you provide a loving and respectful start for your baby, whether you're feeling blissfully happy, or struggling in the face of challenges.

## Your baby's emotional life in the womb

**Myth:** *Your baby is born as a blank slate and begins to form her personality after birth.*

**Fact:** *Thanks to advances in brain science, we know that babies are acutely emotionally sensitive in the womb. What's more, emotional experiences before birth influence brain development, bonding after birth, and susceptibility to stress and anxiety in infancy and beyond. How your baby experiences life, from conception onwards, really does matter.*

Your baby's evolution from a single cell is rapid and complex. The rate of development in the womb is many times greater than at any other time of life. This is hugely significant. In the womb your baby's body and brain take shape; pathways for muscle coordination, digestion, thought, feeling and sensitivity are laid in the brain; and genetic expression is influenced. What happens in your life, in the environment of your womb, and your baby's experience of these affects your baby physically, emotionally and socially.

Your baby is influenced by the vast range of feelings you experience. This happens in a number of ways. Hormones and other chemicals in your blood stream alter depending on your emotional moods; and these chemical messages are conveyed to your baby, via the umbilical cord. Your baby experiences your body movements and the sound of your voice and other sounds around you. There is also a connection between your limbic (emotional) brain and your baby's – this has been called 'limbic resonance'. So what you feel, do and experience, will be part of your baby's world. Your baby will not necessarily mirror your emotional state, but she will respond. Every experience has an emotional quality that informs the memory of her brain and body.

From early in pregnancy, your baby has emotional feelings and develops emotional sensitivity and expectations. Experiences of bliss and safety influences her cells and her brain structure and makes her more inclined to love and intimacy later in life; similarly, high exposure to distress and fear can incline her to feel anxious and stressed as a baby, child and adult.

### Practical suggestions :

- **Talk to your baby.** You can do this silently at first, or out loud in private. You'll soon get used to it – don't worry, you're not crazy! This is important stuff.
- **Communicate with your baby** through singing, dance, touch (stroke your belly), focused breathing and thoughts.
- **Welcome your baby:** simply acknowledge your baby's fundamental humanity.
- **Let your baby know you love her or him.** Frequent exposure to your 'love hormones' (see page 8) supports healthy brain development and lays a strong foundation for your baby to be able to enjoy close, loving relationships.
- **Look after your needs.** When you feel loved, supported and nourished it will be easier for you to communicate lovingly with your baby. If you are a 'strong' / independent person, or a high achiever / hard worker it may take some practice to see where support could help, and/or to make time to introduce variety, enjoyment and relaxation into your days. The Babiesknow team can provide some coaching on this if you'd like ...

## **Brain development in pregnancy**

During pregnancy, your baby develops more brain cells than there are stars in the universe. She has more than enough 'hardware' in her brain, and then 'prunes' the cell network depending on experience.

The brain has three main areas. The deepest brain stem, and the oldest in evolutionary terms, is the reptilian brain. This is the key to survival: it governs basic body functions allowing breathing, movement, digestion, and sensory perception. The second area is the limbic brain, also known as the 'mammalian' brain. This evolved largely to facilitate relationships and group survival. It is often referred to as the emotional brain – here lie the cells and structures that allow us to bond with one another, and to feel fear, anger, caring, delight and more. The third area, the newest, is the neo-cortex. This allows us to have conscious thought, verbal recall and reasoning.

The neo-cortex does not play a significant role until after your baby's first birthday. Until this time, the limbic, or emotional, brain, is running the show. Its function is influenced by what your baby feels; and, in pregnancy, to some extent by what her mother feels.

The human brain runs along the principles of 'use it or lose it'. The more love we feel, the more love we are able to feel. The more the brain is stimulated by stress and anxiety, the more likely these states are to arise in the future. So how we are nurtured, and how the brain is shaped in its most intense stage of development, has an influence throughout life.

*'The brain is sensitive to experience throughout life, but experience during the critical periods of prenatal life and early postnatal life organises the brain. Our brains and consequently our personalities emerge from complex interplay between the genes we are born with and the experiences we have.'*  
Dr. Thomas Verny <sup>iii</sup>.

## Bonding before birth

**Myth:** *Bonding is something that begins after birth. It doesn't matter whether you feel bonded to your baby in pregnancy.*

**Fact:** *The process of bonding begins in pregnancy. Messages of love and acceptance help your baby have a felt sense of belonging; self esteem begins in the womb. A baby who feels wanted and secure in connection with mum tends to bond well, leading to secure attachment: this lays down a foundation for loving relationships throughout life.*

As humans we are driven to bond and become attached to our parents and carers. In infancy, the need to bond with a parent or caregiver is powerful, yet if conditions are not supportive, bonding will not take place and attachment will be insecure – sufficient for survival but underpinned by discomfort and fear.

Loving and secure bonding in pregnancy is incredibly beneficial. When mum bonds with her baby before birth, it is very likely that the bond will continue to deepen after birth. Positive effects include more successful breastfeeding, improved sleep for mum and baby, and reduced tendency to postnatal depression for mum; plus a feeling of safety & contentment for baby.

### The science of bonding

Knowing a little about what happens physically when we feel bonded helps to explain some of the benefits for you and your baby.

#### *Love Hormones*

The hormones that flow when we have loving feelings are part of bonding. Everybody has 'love hormones', a term coined by French obstetrician Michel Odent. The main love hormones are oxytocin and prolactin: both make you and your baby feel good, and are crucial for loving, secure bonding. They naturally flow in increasing quantities through pregnancy and during birth and breastfeeding; and when conditions are right their flow is maximized. A strong flow of love hormones and endorphins supports health for each person, as well as promoting bonding.

Your baby produces her own love hormones and responds to the hormones that flow from you. These help her feel pleasure, and feel loved and connected to you. Without this sensation, a baby can feel insecure and isolated and foundations of self-esteem and trust are poorly supported.

The flow of love hormones increases when you experience joy, and when you feel loved and in good health; when you're with friends; with loving touch; when you have eye contact with someone you love; during positive visualizations and meditation; with exercise; when you eat delicious food; and during loving sex.

The flow is inhibited if you feel stressed, threatened or in pain, if you feel isolated, sad or upset. If you feel down it may be reassuring to know that simple measures (such as meeting with a friend, having a massage, taking a walk, practicing visualization, eating well) may help your love hormones flow, and when they do, they help to reduce the flow of stress hormones through your body.



### *Easy bonding?*

Loving bonding often comes naturally for a mum and baby, but for some parents bonding does not come easily. What happens in pregnancy, both for mum and for baby, affects bonding. Bonding patterns in the family of origin (of mum with her mum and dad; and their bonds with their parents, and so on) can also be significant.

### *Feeling Safe (Secure Bonding)*

While in the womb, your baby's cells are being primed. Your baby's capacity to feel and give love, at least on the level of protein release, hormone manufacture and other chemical communication, can be set during pregnancy. Even before birth, your baby is developing strategies that support survival and optimal growth, in response to her environment.

Bruce Lipton, Ph.D., cellular and developmental biologist, author and former Associate Professor with the University of Wisconsin's School of Medicine, US, tells us:

*"In the uterus, the foetus is constantly downloading genetic information required for development and growth. But when compromised, it will modulate the instructions, enacting behavioural programmes that enable it to stay alive."*<sup>iv</sup>

These "stay alive" survival strategies may develop if a baby feels insecure or threatened in some way. They can influence behaviour throughout life, for instance in readiness to trust others, the ability to notice and act on personal feelings, and, consequently, choice of friends, activities and work. For your baby, the ideal is to feel safe and loved.

### **What you can do:**

- **Spend time each day** to do nothing but focus on the baby growing inside you
- **Talk to your baby**
- **Let your baby know** he or she is welcomed and loved
- **Go about your daily life** with your baby's presence in mind
- **Do what you love** – when you feel good the 'love hormones' in your body rise
- **Seek support** if you are anxious, stressed, or do not feel a connection with your baby

### **Foetal Love Breaks**

Frederick Wirth, M.D., Neonatologist, former Associate Clinical Professor of Paediatrics, Tufts University School of Medicine, USA, speaks about taking 'foetal love breaks': making time every day to rest, be quiet, tune in to and love your baby. Your foetal love messages teach your developing child to expect love from her environment and her brain will organise itself around the anticipation of receiving love. This positive beginning supports your child to seek out and choose loving, respectful, and supportive environments throughout her life, decreasing the likelihood of being in an abusive relationship as an adult.<sup>v</sup>

## Mum's feelings in pregnancy

**Myth:** *Mum's emotions don't affect her unborn baby.*

**Fact:** *Mothers' emotions do impact their babies in pregnancy.*

What you feel is reflected in your body's chemistry and nervous system, and in the limbic (emotional) region of your brain. Inside your womb, your baby receives a constant transmission of your mood. Being exposed to your emotions as they rise and fall is a vital part of your baby's development.

In pregnancy there are things you can do to limit your baby's exposure to stress hormones and cushion your baby from overwhelming distress and fear. One way is to distinguish between what you feel, and what your baby may feel. For instance, you could say, 'I'm feeling really sad/angry/upset at the moment. These are my feelings and are not because of you. I am going to go and see my friend/do x to try and solve this issue ... and I will be ok.' This may be a new concept to you; but when you speak honestly and from the heart, there will be chemical changes in your body, including changes in neurotransmitters and hormones.

A vital step is to take action to meet your needs, whether you need comfort, information, exercise, nourishing food, a chance to talk to someone, medical support, etc. By taking effective action, your body chemistry and nerve activity will alter. Every time you replace stress with relaxation, fear with love, tension with comfort ... you improve your baby's environment.

### What you can do:

- **Stay in communication with your baby:** name your feelings and acknowledge that she may have a reaction to what you're feeling.
- **If you feel angry, sad, anxious or stressed,** let your baby know that she isn't the cause of these feelings, and you are seeking a way to feel calmer or resolve an issue
- **Do what you can to lift your moods** – happiness, excitement, feelings of peace and high levels of feel-good hormones are really good for your baby's development

## Maternal Stress

Many women feel stressed at times in pregnancy. The big question is, how does stress affect your unborn baby, and how much fear or stress is too much?

If you experience prolonged periods of depression, stress, or anxiety this leads to increased production of stress hormones, particularly cortisol and norepinephrine, in your body. Although the placenta protects your baby from low levels of stress hormones, chronic or extreme stress or fear can impact a growing baby<sup>vi</sup>. At the same time, a baby may produce high levels of her own stress hormones in response to her environment. High levels of stress can have detrimental effects.<sup>vii</sup>

When levels of stress or anxiety are high, the mum's sympathetic nervous system is activated: this stimulates the drive to fight or flee, raises adrenalin, adds to muscle tension and is the antithesis of bonding. This can cause hyperactivity in a newborn, and contribute to sleep disturbances<sup>viii</sup>. According to Thomas Verny M.D., psychiatrist, author and former lecturer at Harvard University USA, stress hormones 'have adverse effects on gene regulation, precipitating excessive destruction of neurons and synapses, changing organisation and function of the brain, and damaging the baby's future ability to deal with stress.'<sup>ix</sup>

These details have only recently been discovered. Our mothers and grandmothers were not aware of the science: but today, it offers a useful prompt to assess and reduce stress levels in pregnancy. The key is to focus specifically on how you feel, rather than on any external measure of what 'should' be easy or difficult. Many high functioning people are not aware that they are leading high-stress lives. Mistakenly, they believe that they are doing just fine as long as they keep all the balls in the air and don't have an ulcer, high blood pressure, or tension headaches; they are not aware that their babies are being flooded with stress hormones, and the potential consequences of this<sup>x</sup>.

Simply being aware may be all it takes to re-assess how you spend your time. Asking for accurate reflection from your peers and colleagues may provide an objective view; and a good therapist may help with stress-evaluation.

#### What you can do:

- o Assess, honestly, how stressed you feel.
- o Do what you love to do.
- o Make time each day to sit or lie quietly and focus on your breath, and slowing down. This helps to reduce tension in your nervous system, and is restful and revitalizing.
- o Spend time outside, in nature.
- o If you are nervous, it will be useful to explore your fears with a supportive friend or professional: this tends to clear the way<sup>xi</sup>.
- o Find out information you need – whatever is your current concern.
- o Postnatal bonding can heal some of the ill-effects of stress during pregnancy. While prevention is the better option, it is reassuring to know that there are many ways to support healing and repair.

#### Taking stock

Are you choosing to address things that are urgent rather than what is important? We meet many mothers who are preoccupied with their career, with pleasing others or holding on to their 'single' life, but miss the important, heart felt connection with their growing baby.

Beneath preoccupation, there is often fear about becoming a parent. Who will you be if you are not a 'lawyer'? Will you know how to be a mother? Will your partner still find you sexy? Worries like this are often glossed over by maintaining a pre-parent lifestyle, as if making the most of whatever time is left before babies arrive. But parenthood has begun, even though your baby is not in your arms.

Your life will be more fulfilling, and your baby's womb environment more nourishing, if you take time to reduce your stress. Remember, bringing joy to yourself brings joy to your baby. You can begin with simple, practical steps.

## Dad – you and your baby in pregnancy

**Myth:** *Dad's relationship with his baby begins after birth.*

**Fact:** *Dad and baby can bond during pregnancy; your baby will recognize and respond to you from birth if you have been involved during pregnancy. In addition, your relationship with your partner influences your baby, and your bond with your baby.*

It comes as a surprise to many men that their relationship with their baby can begin before birth; and that father-baby bonding before pregnancy can have many positive benefits.

Your baby is able to hear your voice, and feel your touch when you massage or stroke your partner's abdomen. In later pregnancy, you may experience your baby moving in response to your voice or touch. Many fathers enjoy this reciprocal contact.

Your baby will also be on the receiving end of your actions towards your partner – if your partner feels loved and supported by you, your baby is bathed in hormones of love and a safe environment; if your partner feels threatened by or uncomfortable, your baby will be impacted by this, too.

Despite an increased involvement of men in parenting today, a lot of men are confused about their role. Even one generation ago many dads were not in any way involved in pregnancy, may not have been at the birth of their child(ren) and may have been hardly included in parenting. So for many Dads today, it's all new. Another issue is a lack of adequate support for fathers – in the midst of pregnancy women and babies tend to get all the attention!

### Looking after you

Please remember that, while it's important to be supportive to your partner, *you* need to feel good – doing what you enjoy, and getting the support that you need. Then you can give your best to your partner without depleting yourself.

It may be helpful to review any stress or anxiety at work or at home. And it's important to have support. This may be a mate, perhaps one who is already a parent. It may be a spiritual leader; it may be your own Dad. There may be a dad's group. In a balanced partnership, supporters receive support; thereby no one is the 'martyr' whilst the other benefits - instead, each person benefits, and so does the growing baby.

### What your partner needs

Whilst pregnant, your partner will need you to honour her as a woman as well as a mother. Making conversation with your baby supports your partner in many ways, and begins the journey of co-parenting; taking time to be with your partner will support her and help her feel secure – and help to keep your relationship thriving. Honouring your partner's sexuality or honouring your partner as a sexual being and maintaining intimacy is also important: as is honest discussion if sex becomes a problem.

While your role as protector, friend, supporter and lover is important, this is not to suggest that the ultimate is to give yourself up to your partner at all costs. There is a difference between

supporting through a sense of obligation, or perhaps with some resentment, and supporting with love and with respect for your own needs and feelings. Your baby, at all stages of pregnancy, is bound up with the dynamics between you and your partner.

#### *Keeping lines of communication open*

It will be beneficial if you can talk openly during pregnancy, so that you are both clear about your wishes, hopes, expectations and fears, and discuss your views on practical issues such as sleep, feeding, contact. There will no doubt be areas where you do not have the same perspective, or even strongly disagree: it's important to discuss your differences of opinion, and very helpful to do it before your baby is born. The listening exercises on a babiesknow course help with this.

Honest communication strengthens the bond between you and will help you both appreciate where support or more information would be helpful. When the bond between you is strong there is freedom for your incoming baby to simply 'be', whereas if the bond is unstable or there is conflict, your baby may compensate her behaviour to accommodate mum or dad's needs: a baby can become a 'care giver or a "foetal therapist".<sup>xii</sup>

#### *After birth*

A baby and mother are a 'dyad' or a 'unit' and, ideally, should be separated as little as possible. The early days are a wonderful opportunity for a baby to bond with mum and it is this bond that sets the scene for all future relationships.

One important role for you as Dad is to protect this dyad. Helpful actions may be as simple as holding off telephone calls whilst Mum is napping, feeding or bathing, it may be holding a boundary from unwelcome "good-wishers"; it may be asking others to help with some cooking, or doing the cooking yourself; etc., and it may be arranging for you to have time with your friends, away from the home, to recharge your batteries.

It is not unusual for a dad to become jealous of his partner's affection for her baby; this often reflects the dad's early experiencing of being parented. It may be challenging to play 'second-fiddle' for your woman's affections, and to appreciate that your own bonding with your baby will follow a different process. Yet by protecting this space for relaxation, bonding, and breastfeeding, you are offering profound love and support. You and your partner can also hold your partnership dear, gently allowing it to adjust to the new dynamics of your family.

When Mums are supported, babies are supported. And when the bond between mum and baby is secure and strong, the baby's nervous system and brain develop in reaction to this: in such a way that the baby is likely, through childhood and into adulthood, to be able to enjoy loving and trusting friendships. Feeling secure also supports optimal brain development<sup>xiii</sup>, enhances your baby's inclination to bond with you both after birth, and, quite simply, feels good for him or her.

#### **What you can do:**

- **Spend time with your partner**, helping her feel good. Your baby will learn to connect your presence with a sense of pleasure and safety.
- **Talk to your baby and** massage your partner including, but not exclusively, her belly.
- **Gather your own network** of friends and family so you can have fun, and support, outside the home through pregnancy and beyond. Receive a massage for yourself!
- **Keep the lines of communication open** with your partner.

## Your own experiences as a baby

**Myth** *What happens to us as babies has no impact on the way we parent.*

**Fact** *Your earliest experiences, particularly of relationships, have a significant impact on the way you relate to your baby and adapt to parenting now.*

We tend to parent how we were parented. If the experience was not a good one, we may react by parenting in the opposite way, and this is rarely successful. Exploring early life experiences is a powerful way to consider what may inform your feelings and your parenting. This may inspire you to make 'healthy' decisions that meet the needs of your unique family, now. Many people tell us that doing this gives them 'permission' to trust their own instincts or 'innate' knowing, and to parent from the heart, with confidence and love.

As we have covered earlier in this document, early experiences affect the wiring and function of each person's brain; yet it's also true that human brains are amazingly 'plastic' – that is, continually growing and open to change. Becoming clearer about what influences you can make it easier to let go of beliefs and behavioural habits that no longer serve you, and do not meet your baby's needs today. The positive impact of this for your baby will be greatest if you let go of unhelpful beliefs and habits before conception; but it's never too late, even if you are a grandparent.

### **What you can do**

Spend some time, ideally with support from a trained counselor or therapist, if possible, with someone trained in the field of early life issues.

#### **Did you know?! Early relationships influence the mates we make in later life**

As your baby's brain is developing it is laying down a matrix of neurological "attractors" in its limbic, or emotional, region. These attractors act like magnets for others: through life, completely unconsciously, your baby's attractors incline him or her to form relationships with others whose behaviour feels familiar, or in other words, mimics the behaviour experienced in the first relationships with mum and/or dad, siblings and others who are close (whether this is comfortable or not). Research by brain scientists is offering a physical explanation of the old adage that 'we tend to marry our fathers/mothers'!<sup>xiv</sup>

## Your check list for positive pregnancy, for mum, dad & baby

### **Eat well and avoid toxins.**

What you eat and drink has an effect on your baby. It is critical that you abstain from alcohol, tobacco, all 'recreational' drugs, and talk to your doctor about any risks associated with prescribed medication. We encourage you to eat well, and to gather information to help you do this. It's also important that others do not smoke around you.

### **Exercise and aim for balance & variety.**

There are many connections between exercise and emotional health, and the benefits of socializing, having fun, and enjoying a variety of activities. Aim for balance. Remember – your 'feel good' hormones are good for your baby.

### **Set up support systems.**

This will give you more opportunities to achieve a balance, to relax, to have fun, and to deal with any difficult situations that arise.

### **Keep your stress levels to a minimum.**

High levels of stress are harmful to a developing baby. (See page 11). If you are feeling stressed, we urge you ask why, and to take steps to reduce it. This applies to both Mum and Dad as one will be affected by stress from the other.

### **Find out about your own birth, early childhood and relationship with your parents.**

This will help you let go of habits that no longer serve you, and parent from your heart. It's never too late, even if you are a grandparent.

### **Tend to and explore your relationship with one another as parents.**

It's important to create time to be together and nurture your relationship, which will continue growing as your baby and family grow.

### **Come along to the Babiesknow weekend!**

## End notes

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<sup>i</sup> Matt Ridley, *Nature via nurture* Harper Perennial 2003

<sup>ii</sup> The need to feel heard and seen, in pregnancy, entails feeling acknowledged and accepted. We look at how this can work in practice later in this article.

<sup>iii</sup> *Tomorrow's Baby* Thomas Verny MD. and Pamela Weintraub, Simon & Schuster

<sup>iv</sup> Bruce Lipton source needed on this: is it biology of belief, or is it an interview, or podcast, or lecture?

<sup>v</sup> *Prenatal Parenting* Frederick Wirth, Harper Collins

<sup>vi</sup> The July/August 2004 issue of *Child Development* found that a mother's stress level during pregnancy could have significant impacts on the unborn. Dr. Bea Bergh (Full Professor, Developmental Psychology; Developmental origins of behavior, health and disease-DOBHAD) found that mothers to be who experienced prolonged stress between the twelfth and twenty-second weeks of their pregnancies were more likely to have children who exhibited anxiety and attention deficit/hyperactivity disorders.

<sup>vii</sup> "Studies show that high level of maternal stress during pregnancy has a negative effect on a child's development. ...stress hormones are thought to impact the developing brain via hypothalamic-pituitary-adrenal functioning, alterations of neurotransmitter levels, and disturbances in cerebral lateralization (Gunnar, 1992, 1998; Schneider, 1992; Seckl, 2004).

<sup>viii</sup> A survey-based study, part of the Avon Longitudinal Study of Parents and Children (ALSPAC), assessed pregnant women living in Avon, England, who were due to give birth in a 21-month window. More than 14,000 women – an estimated 85 to 90 percent of those eligible – responded to questionnaires that gauged how depressed or anxious they were at multiple points early on in, late in, and after their pregnancy. Later on, the women were then asked to report on their child's sleep habits at 6, 18 and 30 months, detailing how long the child slept (a consolidated daytime and nighttime total), how often the child awoke, and if he or she exhibited any of seven common forms of sleep problems, such as having nightmares, refusing to go to bed or having trouble falling asleep. Allowing for numerous other influential factors (including postnatal depression and anxiety, smoking habits, social class etc.) the outcomes revealed that mothers classified as clinically anxious 18 weeks into pregnancy, compared to their non-anxious counterparts, were about 40 percent more likely to have an 18-month-old who refused to go to bed, woke early, and kept crawling out of bed. The child's rocky relationship with sleep often persisted until he or she was 30 months old. A similar effect was found in children born to mothers who were depressed during pregnancy.

Related studies now show that stress, which is associated with increased exposure stress hormones, like cortisol, may disrupt a child's formation of a bundle of nerve cells in the brain – called the suprachiasmatic nucleus – which act as a signaling system that tunes the body's internal clock. This signaling system helps to properly regulate daily rhythms of waking, sleeping, even hunger – that is, if its formation has not been disrupted. This could explain why sound sleep doesn't come easily to kids whose signaling systems may not be properly calibrated.

<sup>ix</sup> *Tomorrow's Baby* Thomas Verny MD. and Pamela Weintraub, Simon & Schuster

<sup>x</sup> During pregnancy, highly anxious women tend to have higher levels of norepinephrine and lower levels of dopamine. Increased norepinephrine is related to high levels of arousal and agitation, and less dopamine correlates with less positive mood and reward expectation. Their newborns have lower levels of serotonin and dopamine, greater right frontal activation, lower vagal tone, and experience a variety of growth delays (Field et al., 2003).

<sup>xi</sup> Fear may arise for any number of reasons. Fears in relation to birth are common. Says Charisse Basquin, D.C. Doctorate of Chiropractic, Pre and Peri-natal Therapist and birth assistant 'I've worked with pregnant Mums who were seriously frightened of the baby coming through their vagina. Often these babies would hold themselves higher in the uterus, not engaging into the pelvis which could initiate a healthy, vaginal birth. After working with the Mum with her fears and coming into a healthy sense of giving birth, the baby's head engaged and led to a healthy birth with no interventions.'



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<sup>xii</sup> This term has entered common usage among pre and perinatal psychologists, including Dr Frederick Wirth.

<sup>xiii</sup> There are many identified ways in which brain development is positively supported when a baby feels loved and secure. One interesting finding is that babies who are lovingly nurtured actually develop higher numbers of receptors for oxytocin in the membranes of cells in certain regions of the brain including the amygdala, which is central to the limbic or emotional system. In other words, they develop so as to be more able to experience good feelings (oxytocin is one of the love hormones). And because what goes in influences what passes out of a cell; higher input of oxytocin fosters a higher output. And it also follows, that, perhaps because of a lack of love and corresponding exposure to hormones including oxytocin in early life, some people find it hard to perceive kindness, even when it is shown to them.

<sup>xiv</sup> For more on this, take a look at 'A General Theory of Love' by Thomas Lewis, Fari Amini, Richard Lannon; Vintage Books 2000 (ISBN 0-375-50389-7).