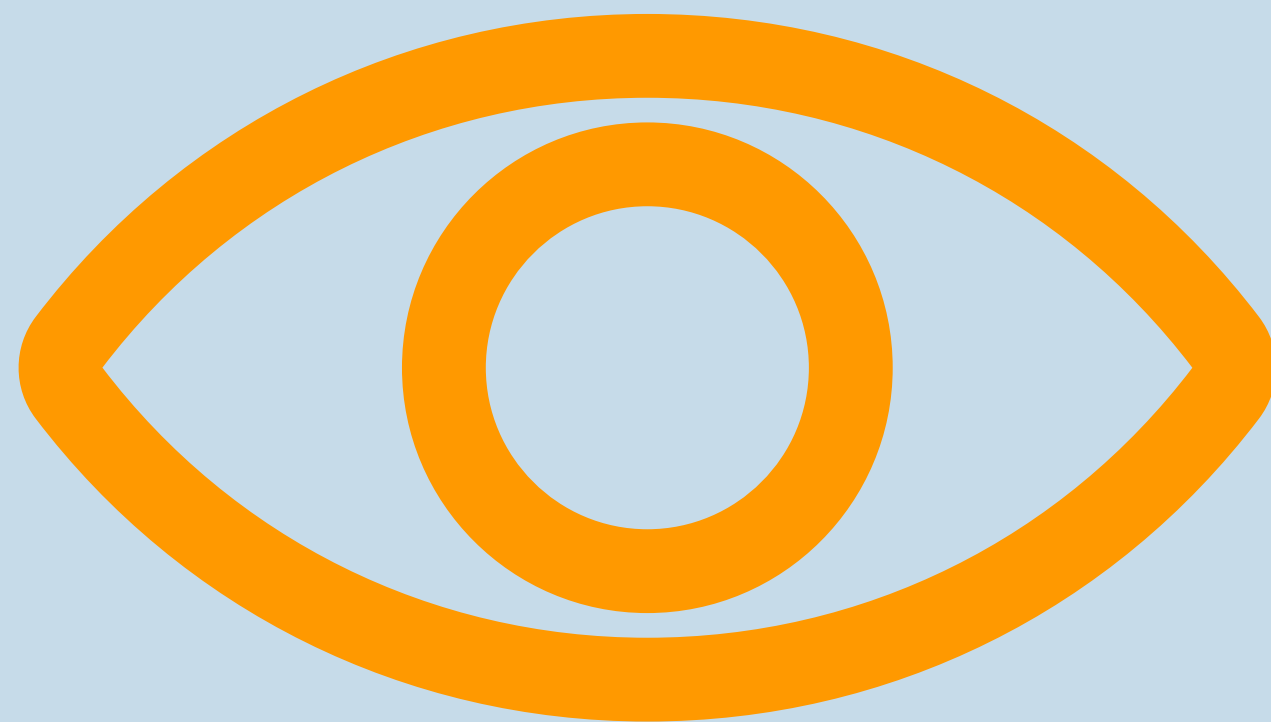




Development of the Foetal Senses

Sight





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Welcome to this Foetal Senses resource, shared through the Butterfly Baby Club, which focuses on... the development of sight in the womb. The resource is divided into two parts. The first part explores how babies develop and use their sense of sight, and the second part describes a sense-based mindfulness activity that expectant parents can share with their unborn babies.

Let's begin by exploring how babies develop their sense of sight in the womb...

The development of a baby's sense of sight is often forgotten about during pregnancy in comparison to the other senses. It is easy to think that sight is not used much prior to birth as there is not too much to look at inside the womb. It takes up to four weeks after birth for a baby's eyes to fully develop and adjust to life outside the womb, so it is easy to assume that sight is not greatly used in the womb.

This is not the case. Eyes are immensely complex examples of biology and begin developing as early as four weeks after conception. The most important parts of the eyes, such as the retina and pupils, are formed at around 7 weeks gestation. This progression is relatively rapid and by week 11 the blueprints of the eyes are created with the most important parts already developed.

At around 14 weeks, the baby can start picking up light signals through their newly developed, thin eyelids. They do still have a long developmental journey ahead and their eyelids will remain closed until week 27. Around this time, the baby will open their eyes and look around for the very first time. They will now react to bright lights by closing their eyes, blinking and maybe wiggling around a little bit.



Sight continued...

Around week 30, the pupils will start to adjust and at week 32 the baby can begin to focus. Two weeks later the baby can start to track movement with their eyes, following something that catches their attention.

Up until now the eyes are mostly made up of rod cells, which help babies to see in the dark and low lighting. However, at around week 34, cone cells start to develop, which will help babies to see in colour. At week 36 the eyes pause their development until new visual stimuli are presented after birth.

The baby must make the most of their time *in utero* to be prepared for life after birth. However, there is not much visual stimuli in the womb. It is quite a dark environment with the occasional glimpse of light that makes it through the mother's abdomen. This can happen if the mother is standing in natural sunlight or a strong source of artificial light.

Maybe you have tried to shine a flashlight through a thin layer of skin on your hands, cheeks or ears before. When you do this, you are able to see a dim and warm glow. This is quite like the foetal environment when the mother's abdomen is exposed to a direct, strong light.

Babies can show recognition and interest in novel light stimuli as they begin to use their sense of sight. In fact, some research suggests that these small glimpses of light can help the baby's eyes to develop before birth. Several experiments have highlighted how prenatal exposure to light is vital to the reduction of unnecessary vessels in the eyes. This illustrates that the baby uses their time and exposure to light prior to birth to practise eye movements and refine the architecture of the eyes. However, there is no need to worry about providing your baby with extra light opportunities. Light exposure from normal everyday life, like going for a walk outside, will be more than enough for your baby to develop their sight before birth.

2

Sight continued...



Babies working hard in the womb to get ready for life after birth, but some things are simply not possible to do *in utero*. There are few chances of training the eyes to focus and very little variation in terms of colour. However, Mother Nature has other ways to help babies develop during this time. Rapid Eye Movements, often referred to as REM, occur in high frequency during the third trimester of pregnancy. REM sleep is often associated with high levels of brain activity and dreaming. It is hard to know if unborn babies dream during REM sleep, but what we do know is that important brain development occurs during REM sleep with neurons firing and wiring together. Some studies suggest that babies spend 80% of their time, or about 19 hours per day, in REM sleep towards the end of pregnancy and this is also observed in preterm babies. Therefore, sleep is a vital part of all babies' developmental journeys.

Now it's time to share a sense-based activity with your baby...

This mindfulness session will require you to go for a walk, preferably surrounded by nature. This activity is designed to help you connect with your baby whilst focusing on the sense of sight. Walking is a perfect opportunity to take a break, reflect and share a moment of calm with your baby.

Once you are ready to begin your walk, place one or both hands on your belly to reaffirm your physical connection with your baby. You may want to keep one hand on your belly throughout the session to maintain the connection with your baby during your sensory experience.

Take a few mindful breaths, in through your nose and out through your mouth.

Don't rush, take your time to get used to this circular breathing.



Sight continued...

Now, begin your walk and notice your surroundings along your journey. Is the sun shining brightly or are there rain clouds approaching? Can you feel a breeze in the air or is it a still environment? Whatever you are thinking or feeling, describe this to your baby either by speaking out loud or sharing your thoughts privately with your little one. Tell your baby how the world looks around you. Can you see flowers, animals or other people? Are you alone and in blissful peace? There may be a variety of beautiful colours around you or different shades of the same colour. Try to convey what you see to your baby.

Begin to focus on the light and other aspects of the environment around you. Are you immersed in nature and sunlight or are you in a city? Take a moment to notice the intensity of the sunlight or artificial lights. Is the light strong and blinding or soft and comforting? Do you think any of the light will be reaching your baby in the womb? Is there something between you and the light, blocking the direct rays? Perhaps there are trees in the way, the light floating between individual leaves and finding its way through to you? Or are you under a shade of some sort and cannot see the direct light? Do the shadows create shapes or is it cloudy with no shadows? Are you in a familiar place or is this somewhere new? Try to imagine what your baby may be seeing. Narrate your journey to your baby to involve them in these visual experiences. Notice how the environment around you makes you feel, how it affects your mood. Try and explain this to your baby and tell them about the things that you are most excited for them to see once they are born.

Once you are ready to finish your mindfulness experience, take a few long deep breaths and enjoy just 'being' with your baby. That brings us to the end of this sensory activity. We hope that the mindfulness session has been a relaxing and enjoyable experience for you and your baby. The next resource in this series focuses on... the development of hearing in the womb.