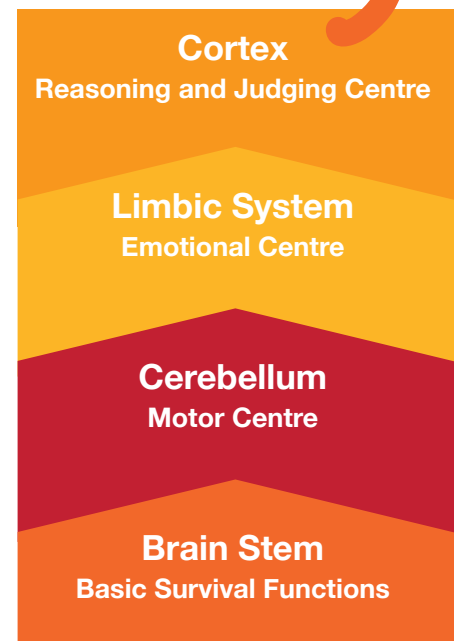


# Bottom-Up Brain Development



The brain is comprised of different structures that grow and develop at different rates and different times.

The **brain stem** area of the brain develops first and is responsible for basic functions that **keep us alive** such as heart rate, breathing and regulating our body temperature. The brain stem is fully developed at birth. It is the part of the brain that is 'hard wired' and least susceptible to change.

Connected to the brain stem is the **cerebellum** or motor centre of the brain. This area is responsible for **movement** and develops over the first few years of life. Development in this area is seen in babies gaining head control, sitting, crawling and walking. In the next few years, children will gain greater co-ordination, learn to skip, kick a ball, ride a bicycle, cut, draw and eat with cutlery.

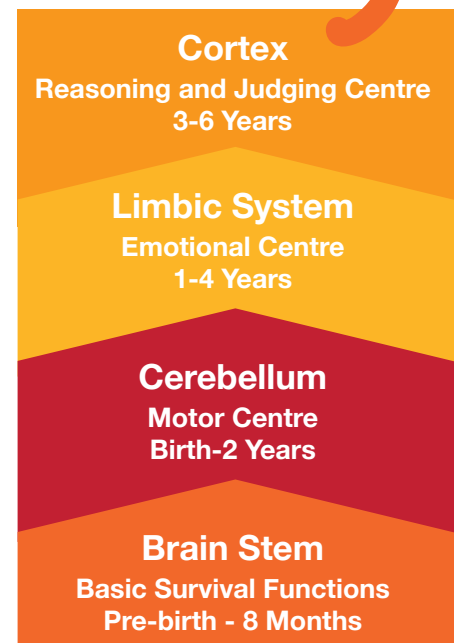
The **limbic system** is the **emotional** centre of the brain and rules the lives of young children up to around four years. During the toddler years, the limbic system goes through a period of rapid development. This helps explain their bursts of irrational behaviour and tantrums. Toddlers need our help to manage their **strong** feelings. Young children **feel** then **act**, they **can't think** then **act**. This is due to the emotional centre of their brain developing before the cortex, or the thinking part of their brain. Young children basically view the world through an emotional lens.

The **cortex**, or thinking part of the brain, is the last part to develop. This is the part of the brain responsible for reasoning, planning and problem solving. This is the part of the brain that enables humans to **think** before they **act**. As children grow and develop, the cortex is gradually able to help us to pause when we are flooded by **strong** emotions, thus allowing us to **feel, think, then act**.

Unlike the brain stem, the limbic system and cortex are highly susceptible to change due to experience and the environment in which the child lives.



# Bottom-Up Brain Development



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# Brain Food Fun for Kids



The following activities are suggested to enable parents and children to have fun together whilst also assisting brain development in their children through play.

## Babies and Toddlers

### Baby Aerobics:

These are fun to practise at nappy change time. With baby lying on the floor:



**Hold baby's ankles and 'march' her legs-gently bending alternate knees up to her tummy as you sing:**

*The Grand old Duke of York  
He had ten thousand men  
He marched them up to the top of the hill  
And he marched them down again.*



**Hold baby's ankles as above but bend both knees together up to her tummy as you sing:**

*Row, row, row your boat  
Gently down the stream  
Merrily, merrily, merrily, merrily  
Life is but a dream.*



**A variation for older babies with good head control:**

**Hold your child firmly with both hands and raise him overhead as if he were a flying aeroplane. Look at him and smile as you sing:**

*Fly, fly, fly your plane,  
Fly your plane up high.  
Merrily, merrily, merrily, merrily,  
High up in the sky!*



**Hold one of baby's ankles with one hand and baby's opposite hand with your other hand. Gently cross and uncross baby's arm and leg over her tummy as you sing:**

*Hot cross buns  
Hot cross buns  
One a penny, two a penny  
Hot cross buns.*



**Pick up baby so that she is facing you. Hold baby firmly with your hands under her armpits and wrapped around her body. Lift baby up and down looking at her face as you say:**

*Up, up in the air like this  
Down, down, for a great big kiss (kiss baby here)  
Up, up  
Down for a kiss (another kiss)  
You're my very special baby (give baby a cuddle here)*



# Brain Food Fun for Kids



## Baby Aerobics:

- ★ For a young baby, practise this while he is lying on his back looking up at you. For a toddler, you could sit him on your knee with his back leaning against your chest. Hold both baby's hands and alternately stretch his arms wide open and bring them back to cross over his chest, as you sing or say:

*Open, shut them  
Open, shut them  
Lay them in your lap.  
Open, shut them  
Open, shut them  
Give a little clap! (clap baby's hands together here)*

*Open, shut them  
Open, shut them  
Don't get in a muddle.  
Open, shut them  
Open, shut them  
Give yourself a cuddle! (wrap your arms around baby here)*

## Clap and Bounce Knee Games:

- ★ With baby sitting or lying on your knee facing you, hold her hands and clap them together rhythmically in time to this rhyme:

*Pat-a-cake, pat-a-cake, baker's man  
Bake me a cake as fast as you can  
Pat it and prick it and mark it with B  
And put in the oven for Baby and me!*

- ★ With baby sitting on your knee and facing away from you with baby's back resting against your chest, hold baby's legs around the ankles and cross her legs back and forth in time to this rhyme:

*Leg over leg  
As the dog went to Dover  
When he came to a stile,  
JUMP, he went over! (holding baby's thighs, lift him up towards you)*

- ★ With baby sitting on your knee and facing away from you, hold baby's body under his arms as you bounce your knees up and down in time to the rhyme:

*Father and Mother and Uncle Tom,  
Got up on a pony and rode along  
Father fell off (lift baby off your knee to one side of your body)  
And Mother fell off (lift baby off your knee to the other side of your body)  
And Uncle Tom rode on, and on, and on (bounce faster and faster)*



# Brain Food Fun for Kids



## Books to share together:

★ The soothing rhyme, rhythm and repetition of these stories can be calming for babies and parents too!

Campbell, R. (2010) **Dear Zoo**, Pan Macmillan

Martin, B. and Carle, E. (1997) **Brown Bear, Brown Bear, What Do You See?** Penguin Books Ltd

Holt, H., Martin, B. and Carle, E. (2007) **Polar Bear, Polar Bear, What Do You Hear?** Henry Holt and Company

Williams, S. and Vivs, J. (2005) **I Went Walking**, Houghton Mifflin Harcourt

Wise Brown, M. and Hurd, C. (2008). **Goodnight Moon 1 2 3: A Counting Book**, HarperCollins

Fox, M and Dyer, J. (2005) **Time for Bed**, Houghton Mifflin Harcourt

Raffi, (1998) **Wheels on the Bus**, Random House Children's Books

Fox, M. and Horacek, J. (2004) **Where is the green sheep?** Harcourt

Rowe, J. (2001) **Whose Belly?** ABC Books

## Children 3-6 years

### Row, Row, Row Your Boat

★ Sit on the floor with you and your child facing each other. Stretch your legs out in front of your and hold your child's hands. Rock backwards and forwards together as you sing:

*Row, row, row your boat, gently down the stream*

*Merrily, merrily, merrily, merrily* OR *If you see a crocodile*

*Life is but a dream.*

*Don't forget to scream!*

### A Smooth Road

★ Sit on the floor with your legs together and stretched out in front of you. Sit your child on your lap facing you. Hold your child securely with both hands as you:

sway gently from side to side as you repeat 4 times

*A smooth road*

bounce a little faster as you repeat 4 times

*A bumpy road*

bounce even faster as you repeat 4 times

*A rough road!*

Then hold your child securely as you part your legs and lift, then lower him or her onto the floor, saying as you do so...

*A ditch!*

### Hand stack

★ Sitting at a table with your child on your knee, place one of your hands flat on the table in front of you both. Help your child to place one of her hands on top of yours then alternate the hand stack with one of your hands then one of hers..... You will each need to pull out a hand to place it on top of the stack when you've used both hands.



# Brain Food Fun for Kids



## Books to share together:

Rosen, M. (2009) **We're Going on a Bear Hunt**. Walker Books.  
 Lloyd, S. (2003) **What Colour Are Your Knickers?** Gullane Children's Books.  
 Horá ek, P. (2009) **Silly Suzy Goose**, Candlewick Press.  
 Dodd, L. (2010) **Hairy Maclary Series**, Penguin Group.  
 Crebbin, J. (2003) **Cows in the Kitchen**, Candlewick Press.  
 Dr. Seuss (2005) **Miniature library: ten classic tales from Dr. Seuss**, Collins Publishers.

## Children 6-10 years

Children at this age will be able to teach you clapping games they know but here are some more suggestions:

### Mary Mac:



Standing close together and facing each other chant this rhyme together as you do the actions: one action for each syllable of the rhyme.

<i>Mary Mac</i>	slap both hands on both your knees, clap hands, clap your hands on child's outstretched hands
<i>dressed in black.</i>	... as above
<i>Silver buttons</i>	hands slap on knees, clap your hands, clap your right hand with child's right hand, then clap left hands together
<i>down her back.</i>	... as first line
<i>She likes coffee.</i>	... as first line
<i>I like tea.</i>	... as first line
<i>She likes sitting</i>	on hands slap on knees, clap hands, right hands together, then left hands together
<i>Grandma's knee!</i>	... as first line

### Waddley Archer



*Waddley Archer, Waddley Archer*

*Doodley-doo, Doodley-doo*

*Waddley Archer, Waddley Archer*

*Doodley-doo, Doodley-doo*

*It's just a simple song and there's nothing to it*

*All you have to do is doodley-do it.*

*I like the rest but the part I like best is*

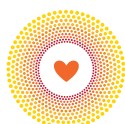
*Doodley, doodley-doo!*

Move hands horizontally across one another, left hand on top, then right hand on top  
 Right thumb and forefinger hold nose while left thumb and forefinger hold right ear, then swap hands  
 Repeat as above  
 Repeat as above

Roll hands forward, then backwards  
 Roll hands forward then do the Doodley-doo nose holds  
 Horizontal hand crosses as above  
 Nose holds as above

## Books to share together:

Read together any books your child chooses and enjoys.



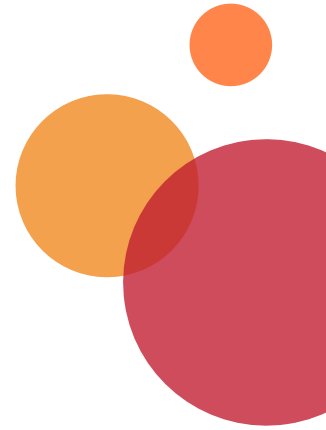
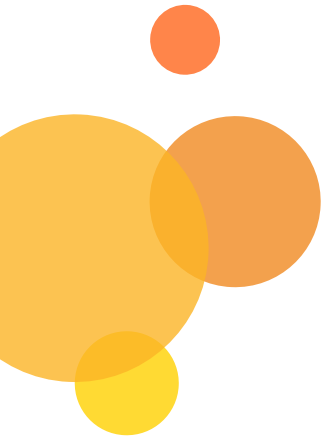
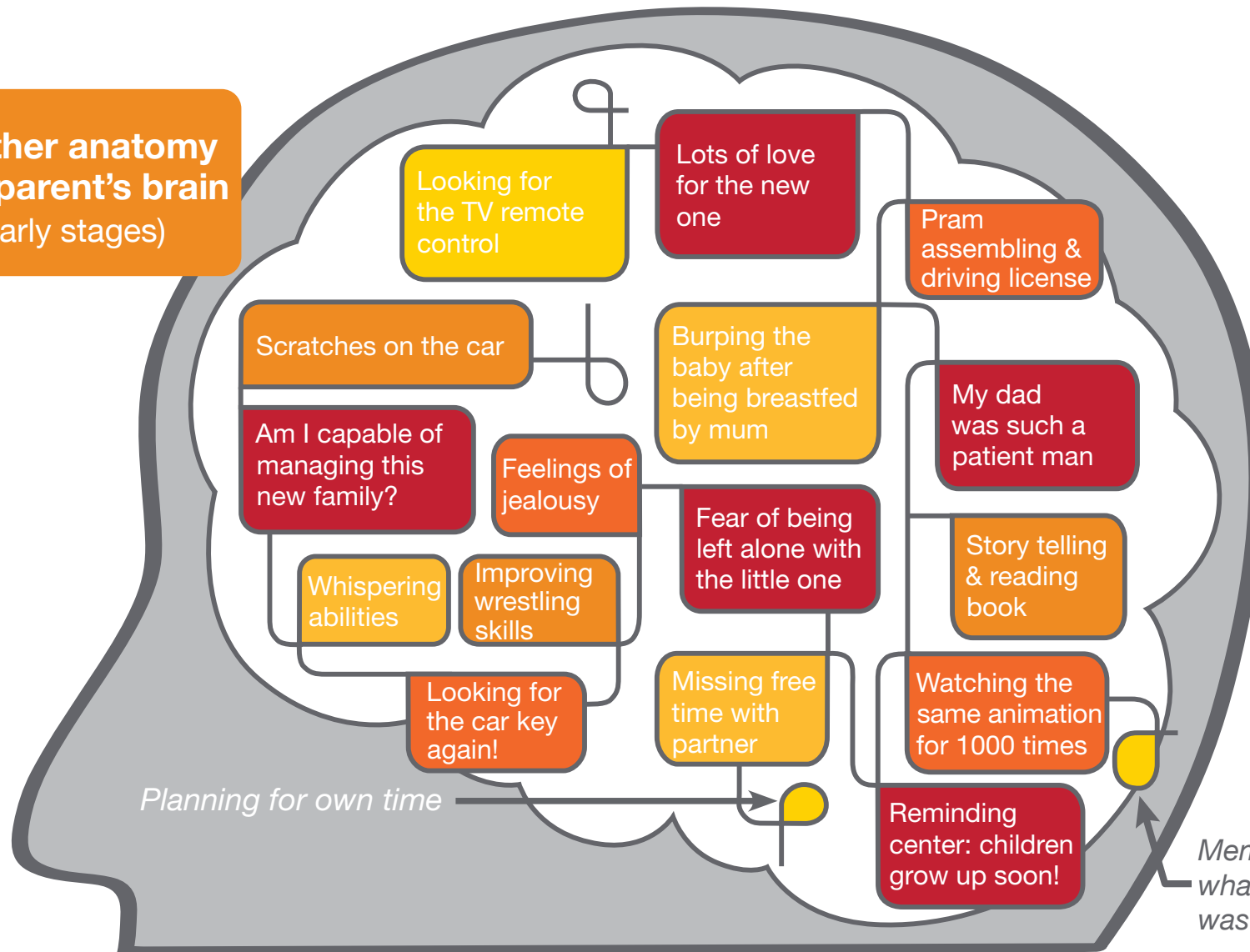
**Australian  
Childhood  
Foundation**



# Complete 2nd Parent Brain



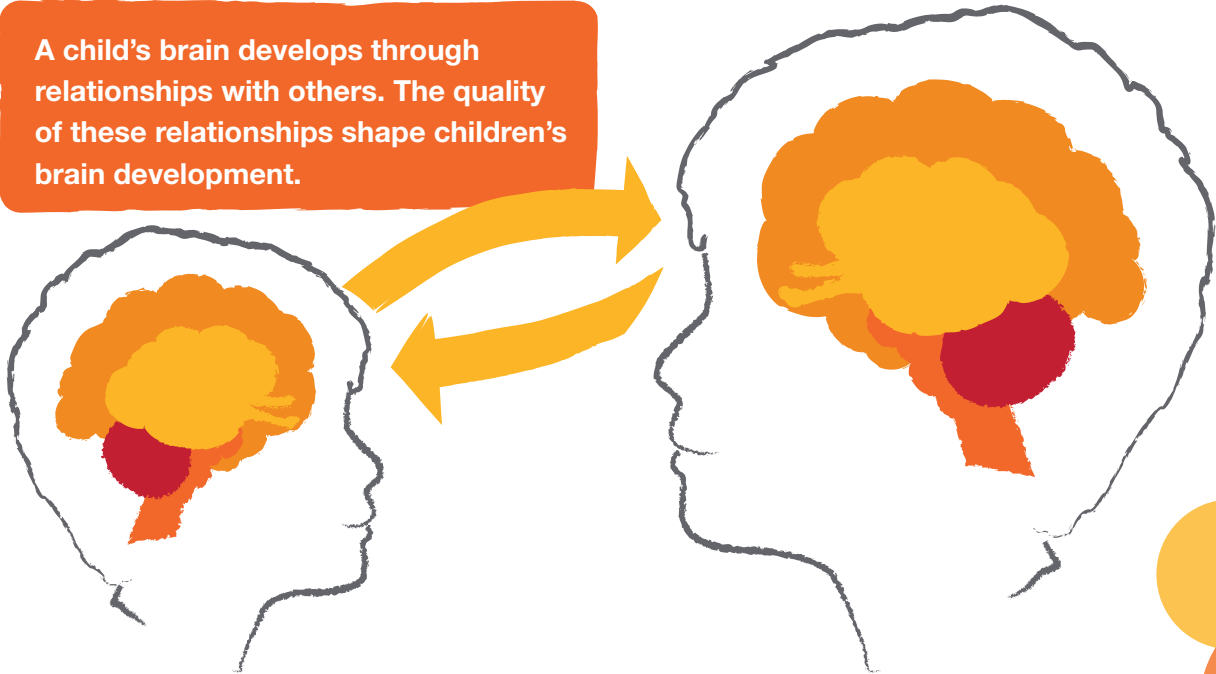
Another anatomy of a parent's brain (early stages)



# Connecting Brains



A child's brain develops through relationships with others. The quality of these relationships shape children's brain development.



## Notes

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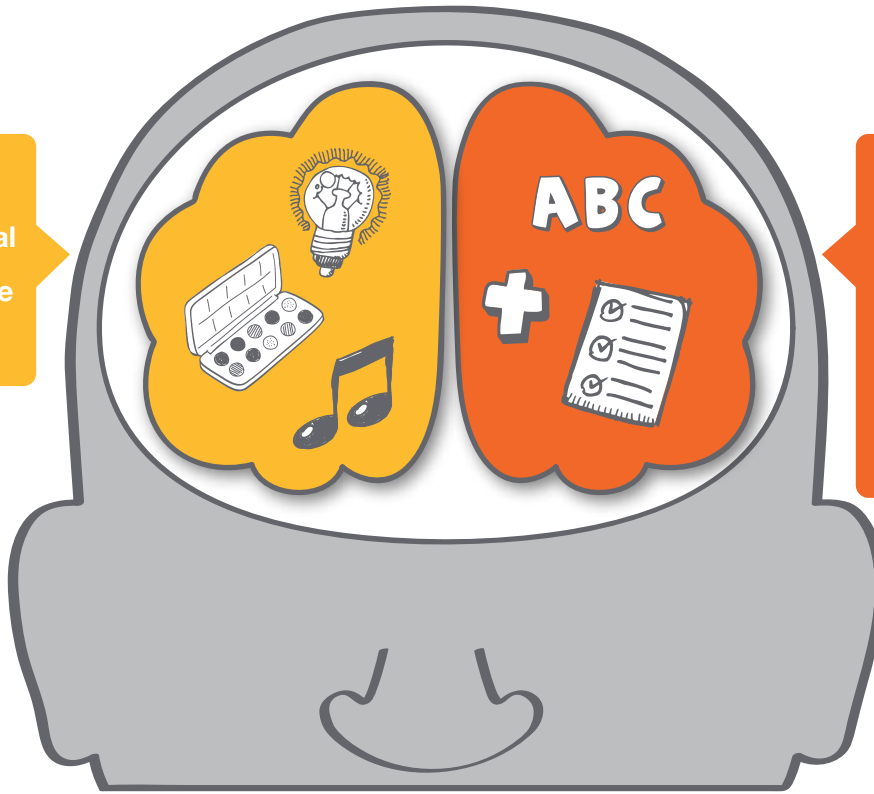
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# Left and Right Brain

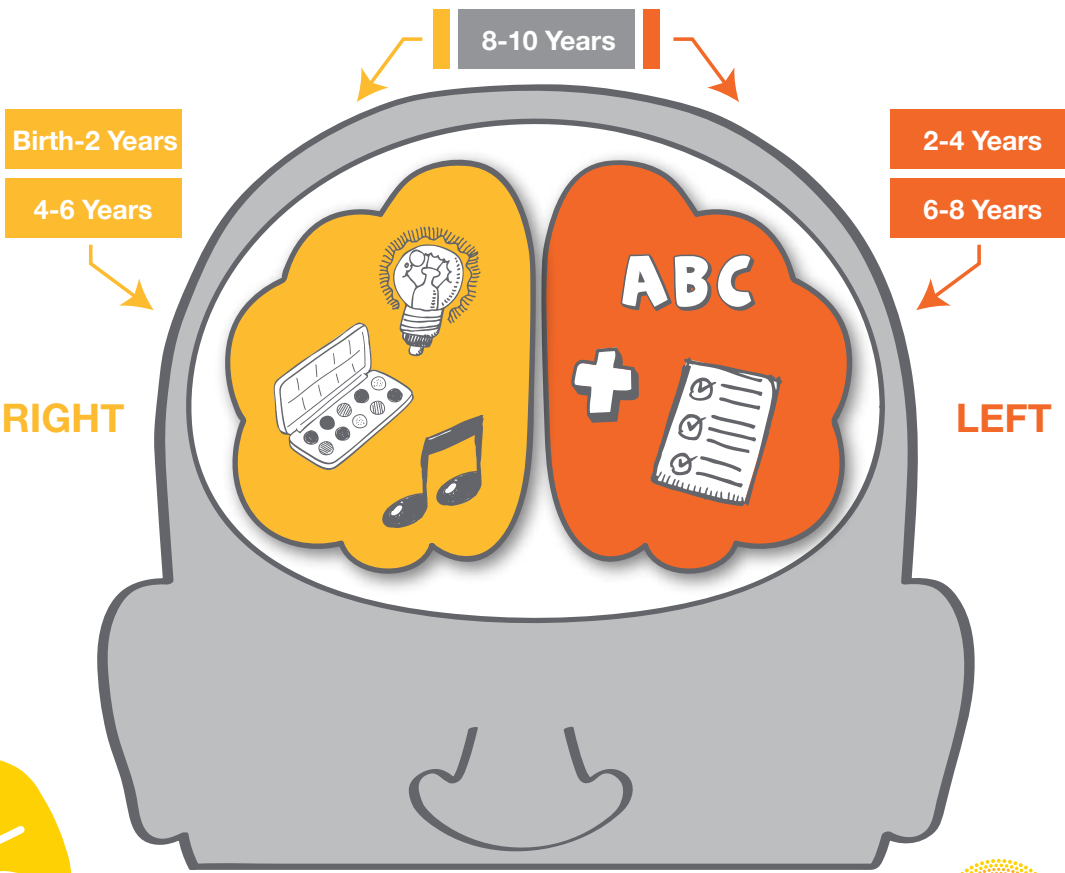


**RIGHT**  
Non-Verbal  
Big Picture  
Sensory



**LEFT**  
Logical  
Language  
Lists  
Linear  
Literal

## Lateral Brain Development

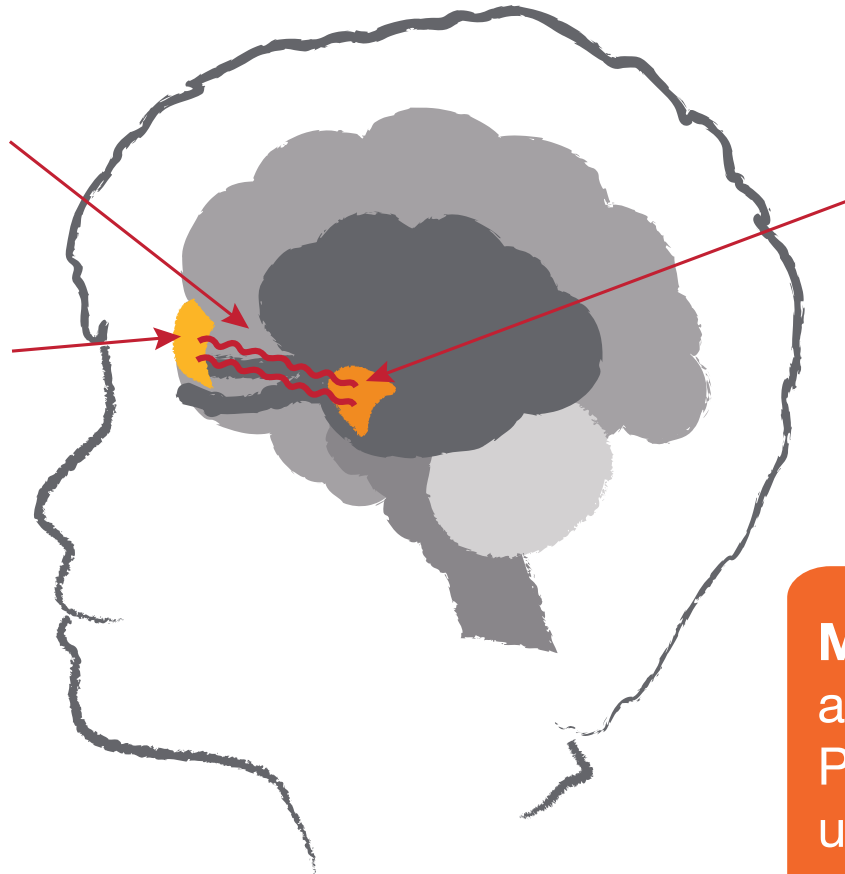


# Mindfulness



**Deactivation**

**Medial Pre-Frontal Cortex**  
The centre of mindfulness/  
self-awareness



**Mindfulness deactivates the Amygdala** (the 'smoke-detector' of the brain) helping us to calm.

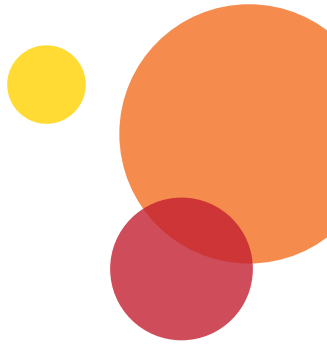
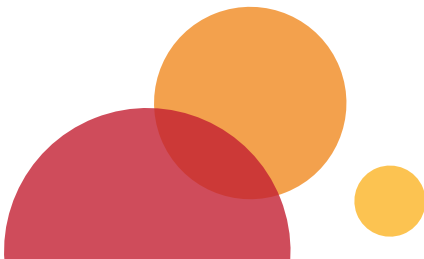
**Mindfulness** also develops the Medial Pre-Frontal Cortex, helping us to develop reflection and empathy for others.



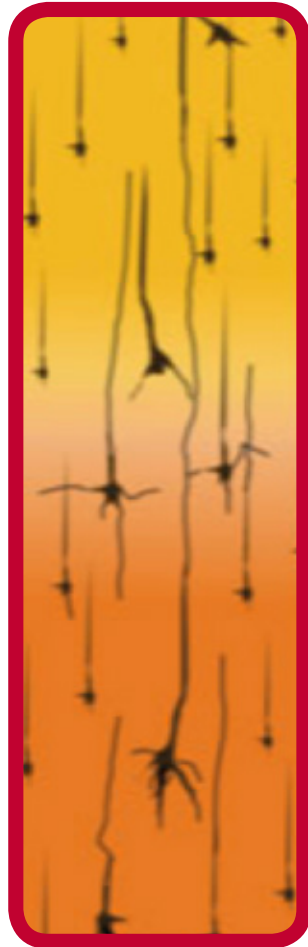
# My children



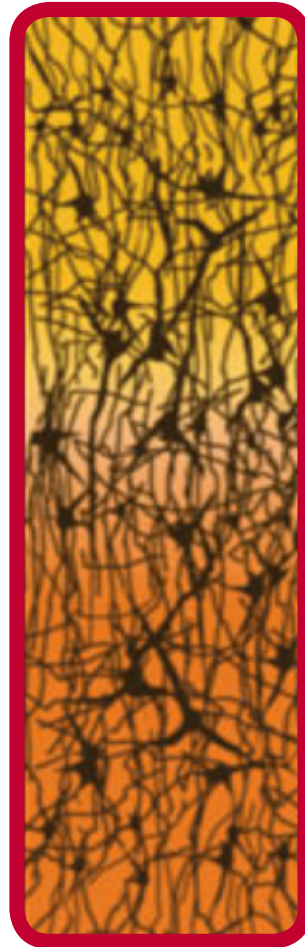
If you had three wishes for your children 20 years from now, what would they be?

A large red thought bubble with a scalloped edge, containing five horizontal white lines for writing.A large red thought bubble with a scalloped edge, containing five horizontal white lines for writing.A large red thought bubble with a scalloped edge, containing five horizontal white lines for writing.

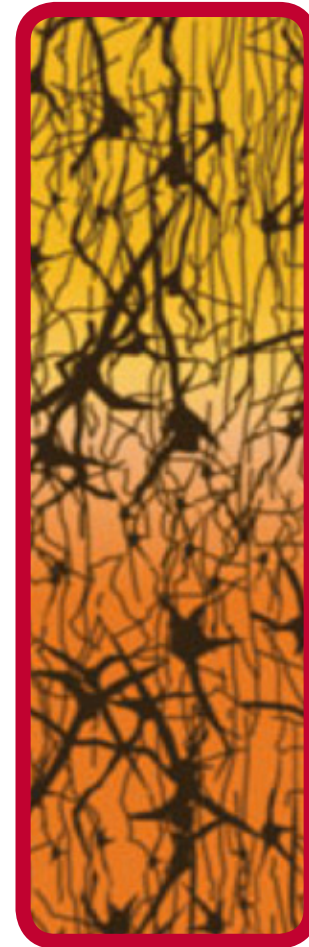
# Neuronal Connections



**Newborn**



**2 Years**



**Adult**



# Stop...Pause...Play



When we can relate to our children with mindful awareness we activate a part of the brain (the medial pre-frontal cortex) which allows our defensive systems to switch off, putting us in a more relaxed state and allowing us to think and act more rationally and to step outside our own experience so that we can **BE MORE PRESENT TO OUR CHILDREN'S NEEDS.**

This is an exercise that we will practice every week or use any time you need to take time out to calm down before you respond to whatever is going on.



## Stop

- Stop what you are doing.
- Make sure your feet are placed firmly on the ground.



## Pause

- Focus on your breath.
- Breathe in slowly, right down into your belly, then exhale completely.
- Take 5 more slow breaths, being aware of each breath in and each breath out.
- Smile and enjoy standing like this for a moment. Feel your body relax.
- Reflect. Ask yourself "What do I need?" and "What does my child need?"



## Play

Respond to your child with new understanding.



# The midline



## Notes

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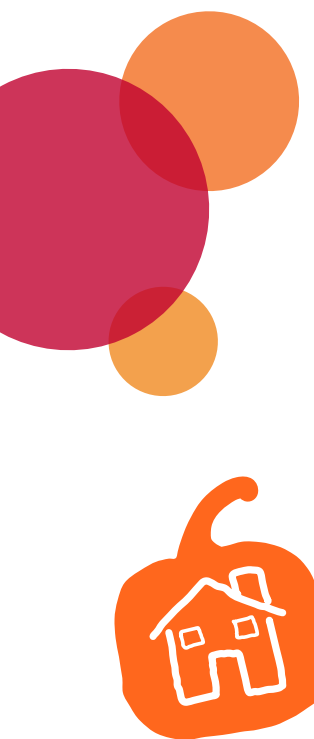
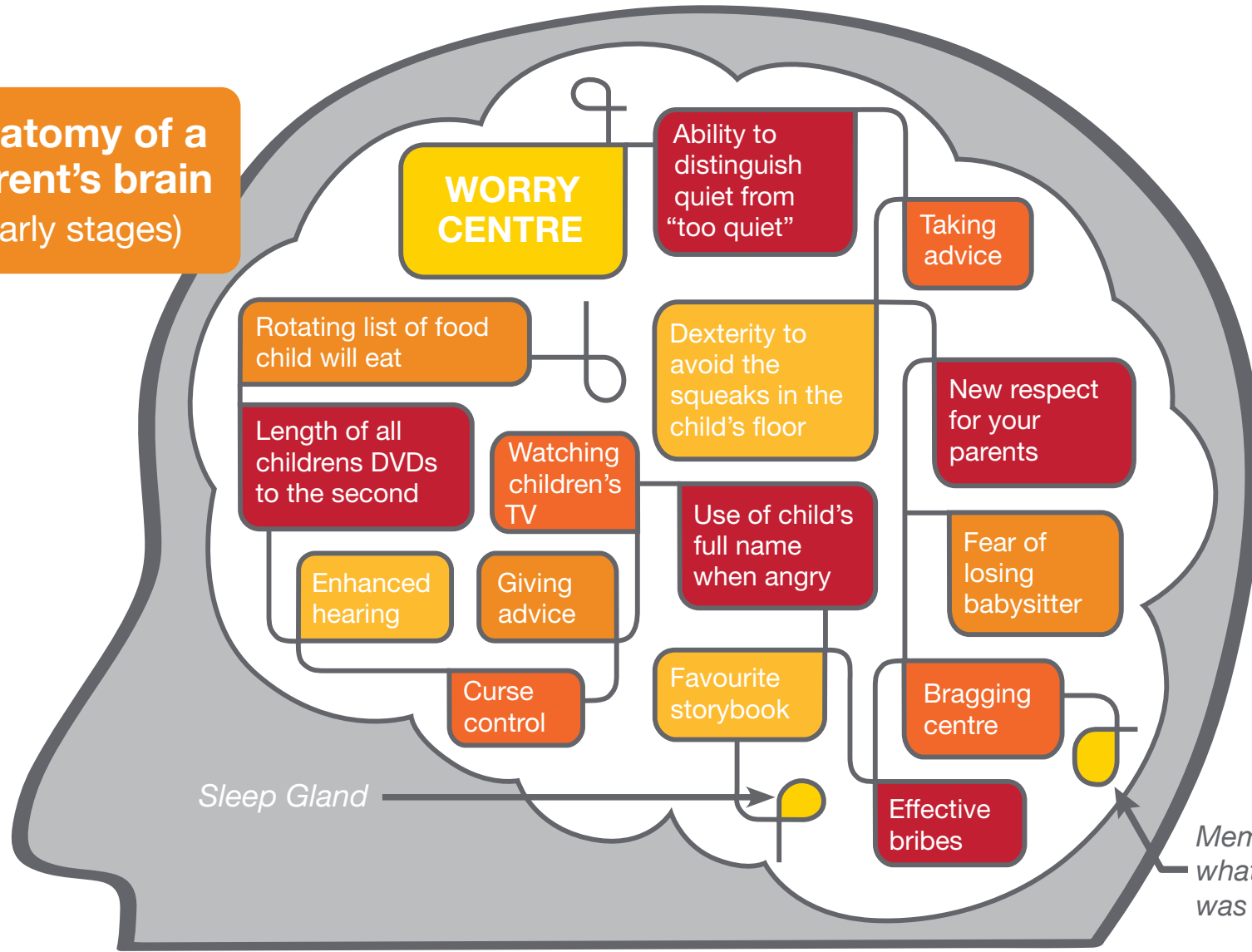
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# Complete 1st Parent Brain



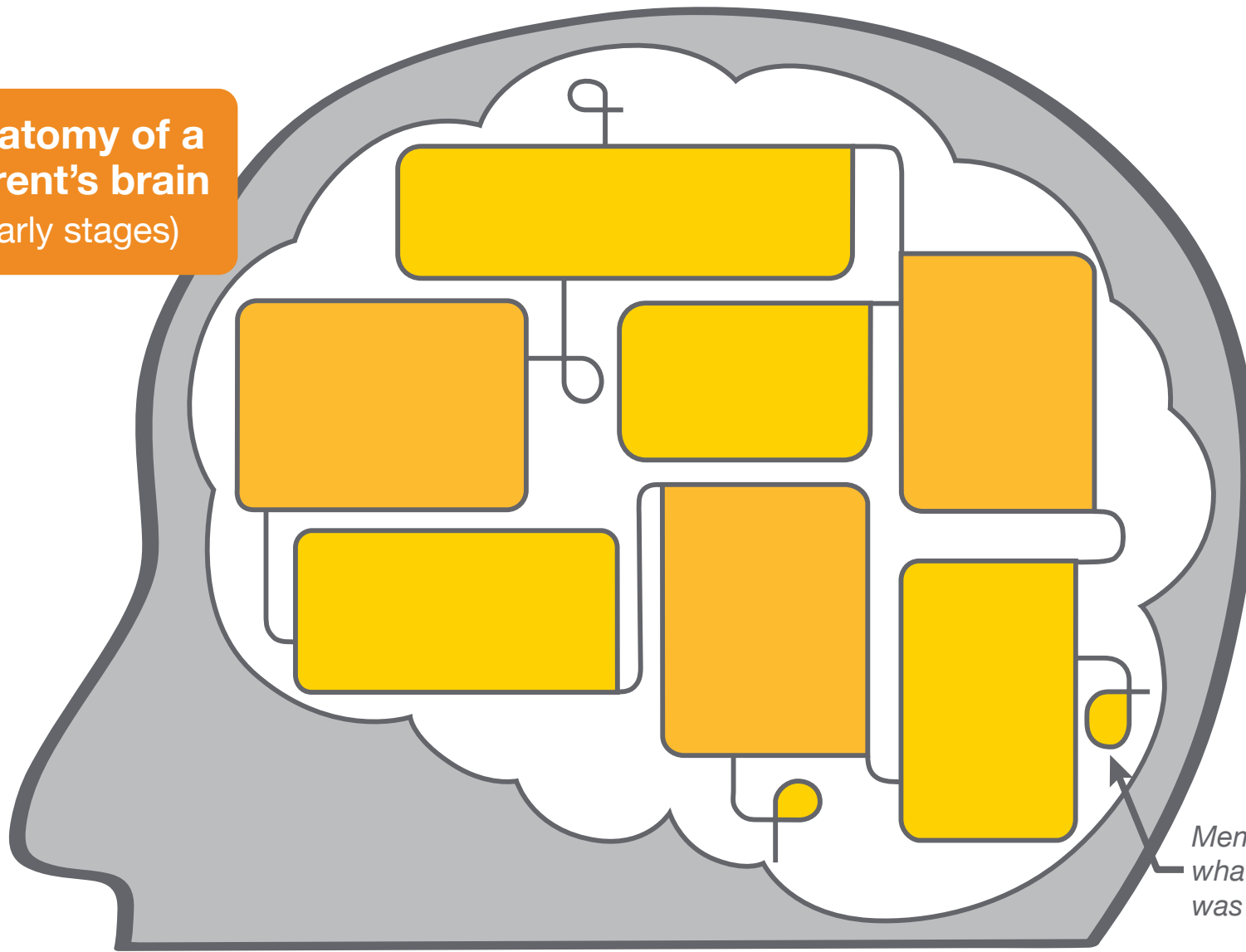
**Anatomy of a Parent's brain**  
(early stages)



# Incomplete Parent Brain



Anatomy of a Parent's brain (early stages)



Memory of what life was like

