

BUILDING BRAINS



A guide to supporting your child's development
through play

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HOW TO USE THIS GUIDE

This guide is designed to help you understand the typical growth of your child's brain, and how that impacts their social development.

It also suggests play activities you can try at home to help you build your child's beautiful brain.

Different children develop at different rates, so the ages listed are only a guide. We encourage you to think about your own child and the skills they are currently showing to figure out where in their growth they are.

02-05

How does a brain grow?

06-08

How does an identity grow?

09-11

How do we help a brain grow?

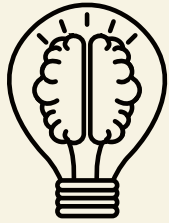
12-18

Brain building play activities

18

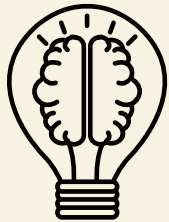
References

HOW DOES A BRAIN GROW?



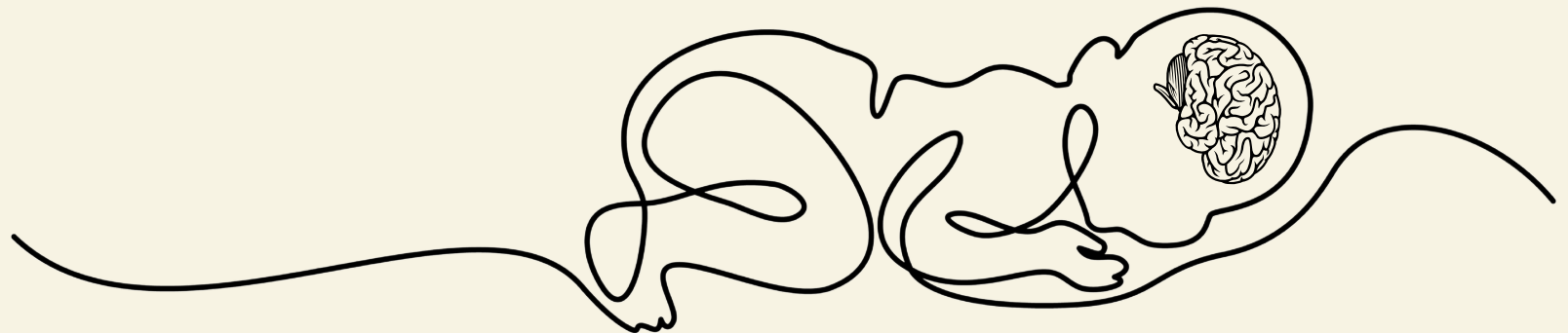
The brain is born premature^{1,2,3}

When a baby is born, they aren't able to control their movement, use language, make decisions, or even regulate their own body temperature. Their brain is still growing, and continues to do so throughout their childhood.

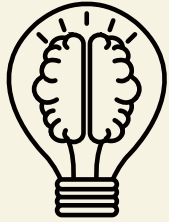


The brain is made up of many different areas^{2,3,4,5,6,7,8}

The different areas of the brain will be described a bit later on. Your main goal in building a beautiful brain is to help it to integrate. This means that we help the different parts to work well together. If a child's brain is not well integrated, the child may be easily overcome by emotions, leading to meltdowns, confusion or aggression.

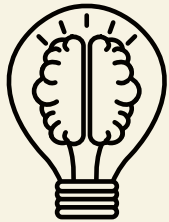


HOW DOES A BRAIN GROW?



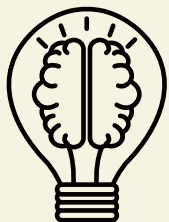
The brain is made up of neurons^{4,8}

The weird looking thing to the right is a neuron. Your child's brain is made up of billions of these things. Neurons receive input from the outside world through our senses, and then 'fire' to cause our reactions. This is called a neural connection. When your baby is born, these connections are not yet fully formed. There are almost endless possibilities for neural connections.



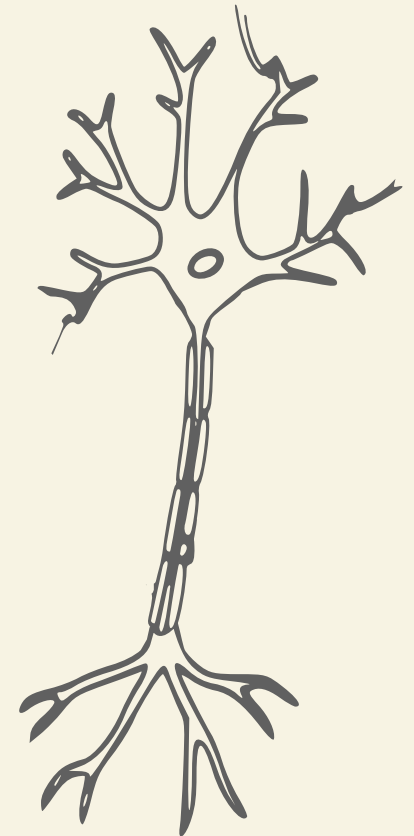
Experiences shape neural connections^{1,4,7,8,9}

Neuroscientists call this 'plasticity'. Your child's brain both expects and needs experiences to help it grow. The more often they have a certain experience, the stronger that connection becomes, like a well worn path through the bush.



You have the power to integrate your child's brain^{1,4,8,9}

You shape your child's brain by providing experiences that create neural connections. You do this every day without even realising, when you hold your child, talk to them, and play with them. If you provide experiences that match how your child's brain is growing, you can help integrate their brain. This guide will give you lots of ideas about how to do this on pages 12-18.



HOW DOES A BRAIN GROW?



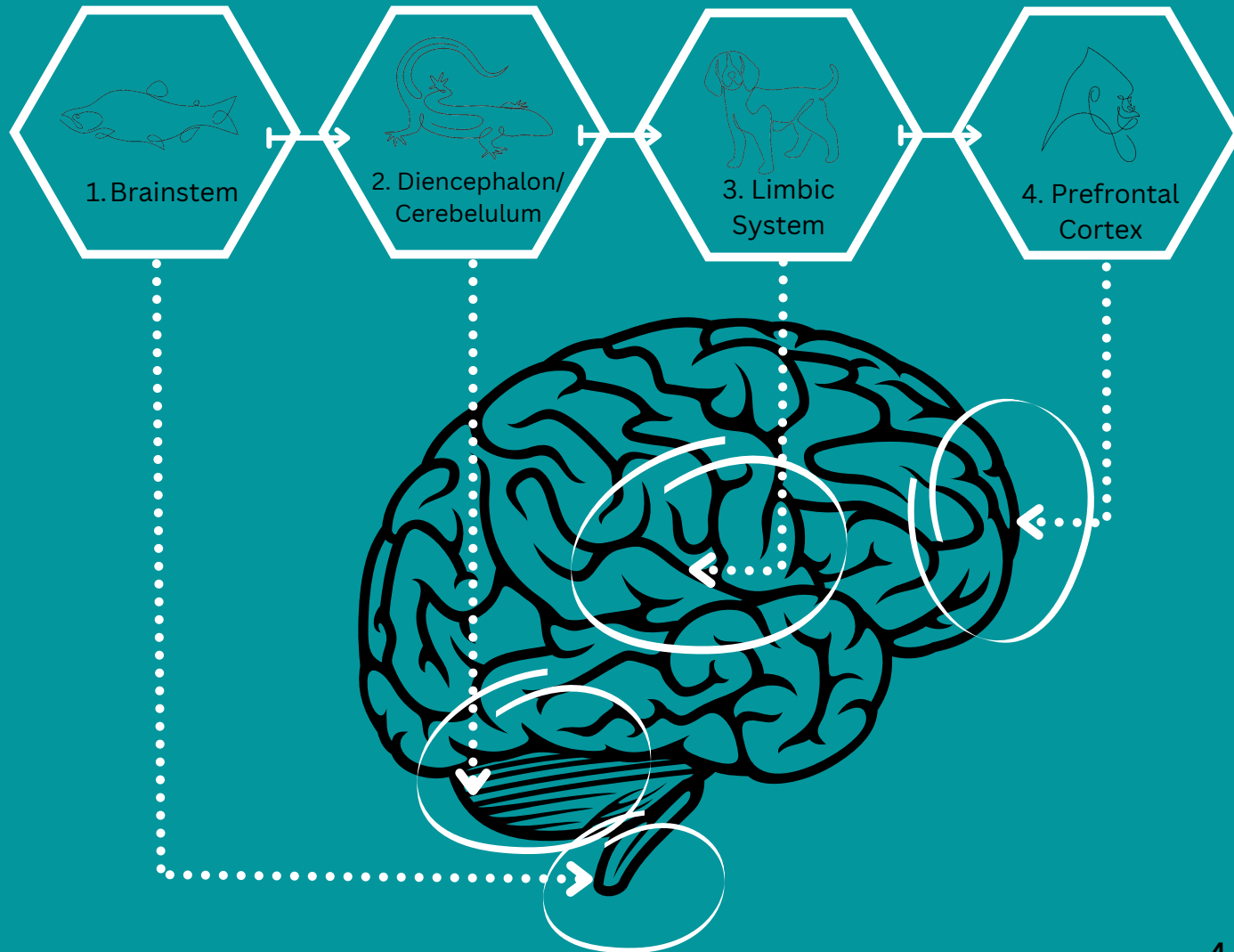
**The brain develops in order,
from bottom to top** ^{2,3,4,5,6,7,8}

Even though you have the power to shape your child's brain, the order in which it develops is the same for all children.

Imagine a timeline of evolution, from the simple fish that first grew legs and the reptiles that walked on earth, to mammals, and finally to the complex and intelligent primates, including we humans.

Your child's brain develops along a similar timeline, becoming more and more complex as it grows. The lower, less complex areas of the brain develop in infancy. The 'thinking' area of the brain develops into later childhood and beyond.

The next page will help you understand these different brain areas.

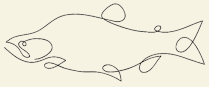


BRAIN AREA

KEY FUNCTION

SPECIFIC FUNCTIONS

KEY QUESTION



Brainstem

Sensing part

- heart rate
- breathing
- body temperature
- blood pressure

Am I safe?



Diencephalon/ Cerebellum

Coordinating part

- appetite
- sleep
- fine motor
- gross motor

Can I do this?



Limbic System

Feeling part

- emotions
- fight/flight/freeze
- seeking connection
- memory

Am I loved?



Prefrontal Cortex

Smart part

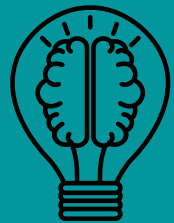
- self control
- planning
- problem solving
- reasoning

What can I learn
from this?

2,3,4,5,6,7,8,10

HOW DOES AN IDENTITY GROW

The order in which the brain develops can help us to understand how children develop their individual identity over their childhood.



Humans are social beings^{1,5,9,11,12,}

The brain seeks social connection. The way our identity develops depends on how others interact with us.



Balance creates identity^{11,12,13,14}

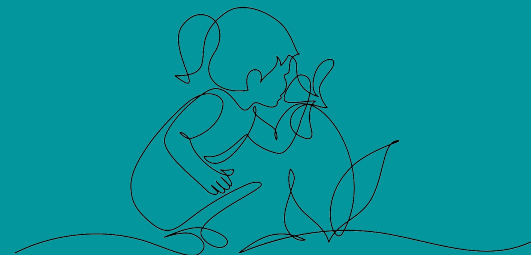
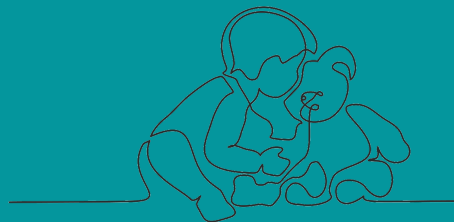
Depending on how a child resolves each crisis, they will be more or less self-assured and confident. If a crisis is unresolved, it may be a challenge throughout the child's life



Each stage of development brings a new challenge^{11,12,13,14}

Each stage of development brings a new way of interacting with people and society, which influences how a child views themselves and others. Erik Erikson thought that children work through a 'crisis' at these stages.

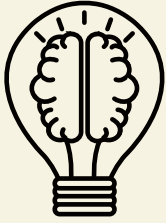
The next page shows the crises, needs and key question at each stage.



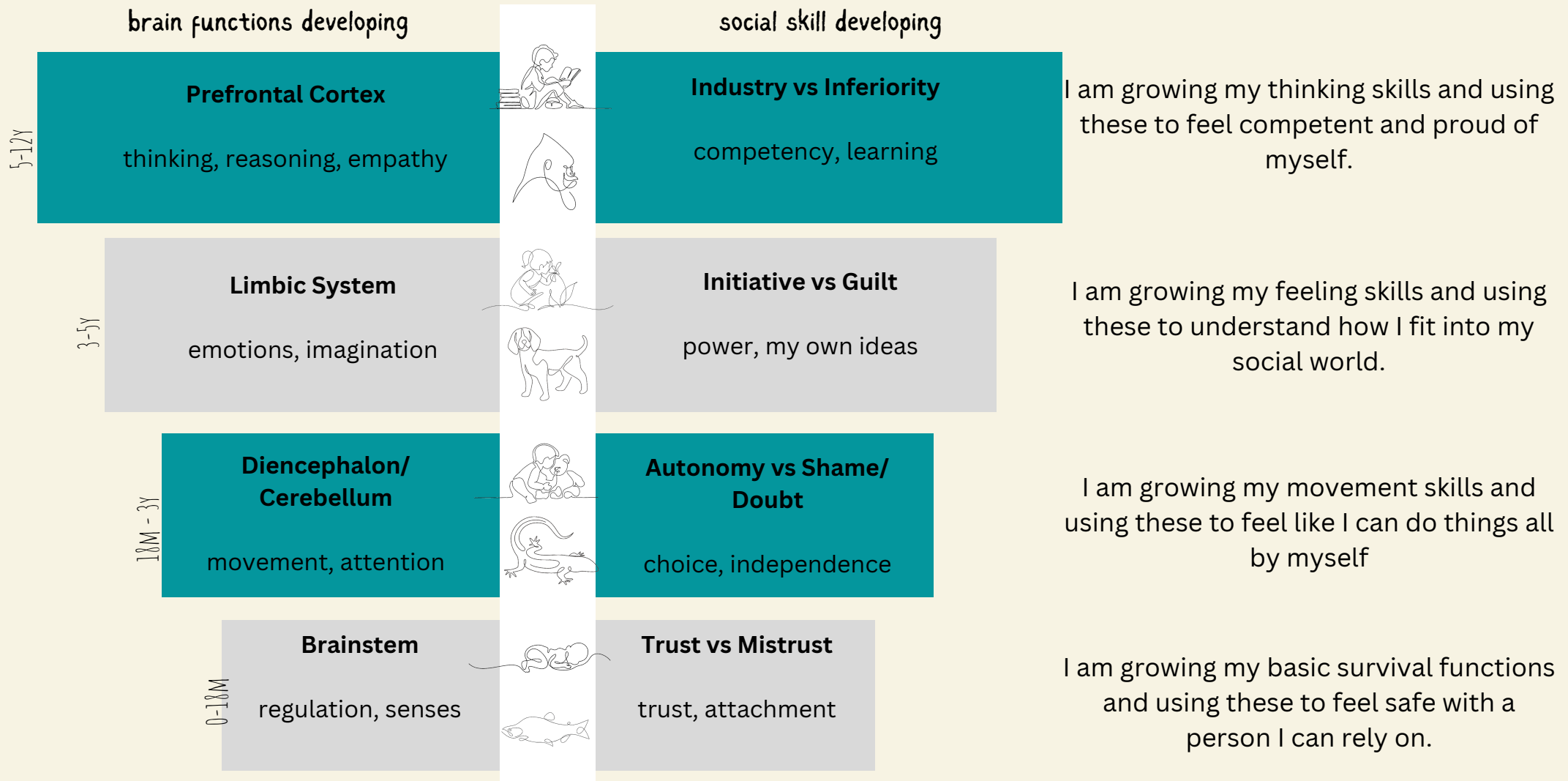
Erik Erikson's Psychosocial Development Theory

AGE RANGE	CRISIS	NEEDS	KEY QUESTION
 0-18 months	Trust vs Mistrust	<ul style="list-style-type: none"> • affection • comfort • attachment • If not: anxiety/mistrust 	Can I trust people?
 18m - 3 years	Autonomy vs Shame/Doubt	<ul style="list-style-type: none"> • control • choices • risk taking • consistency • if not: self-doubt/shame 	Can I do things myself?
 3-5 years	Initiative vs Guilt	<ul style="list-style-type: none"> • power • encouragement • play out social roles/ideas/emotions • if not: guilt/lack of purpose 	Am I a good person?
 5-12 years	Industry vs Inferiority	<ul style="list-style-type: none"> • sense of pride • encouragement & support • to build, use technology, acquire knowledge • If not: inadequacy 	Can I get better at this?

11,12,13,14



The area of the brain that is developing at each stage impacts the crisis that your child is attempting to resolve. We can use this information to help children through these crises, whilst also supporting their brain development.



HOW DO WE HELP A BRAIN GROW?

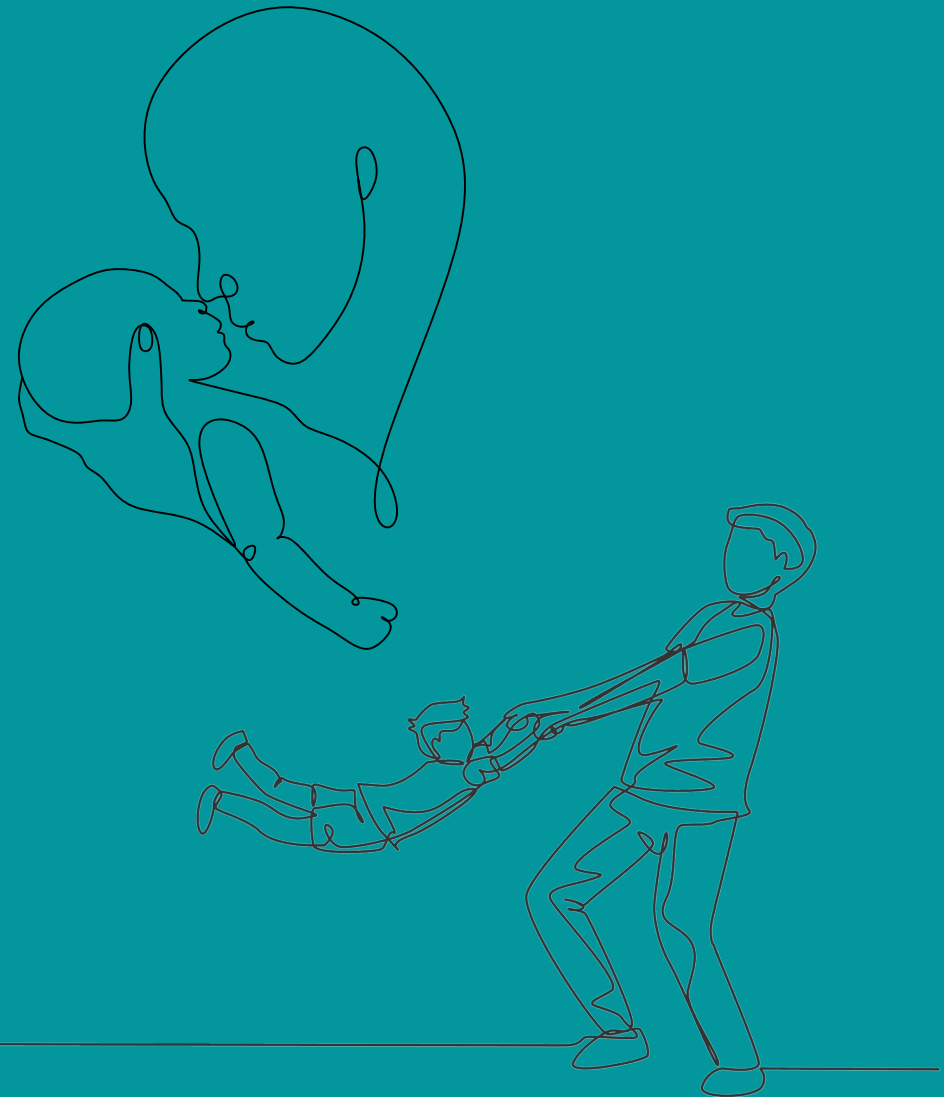
Relationships^{1,3,5,6,8,9}

When babies are born, their brains are 'hard-wired' to seek connection with humans who will take care of them. This is called an 'attachment' relationship. Usually the main attachment figure is the baby's mother, or another person who is the primary caregiver, the person who feeds the baby and responds to their needs.

The experiences this attachment figure provides the infant shapes the neural connections that form in the brain.

When the limbic system is developing later in a child's life, it is again relationships that shape the brain. The child is looking for where they fit in the social world, how others respond to them, and how they feel about people.

Being with your child and giving them experiences to share with you helps to build their brain.



HOW DO WE HELP A BRAIN GROW?

Play^{1,7,15,16}

When we talk about 'experiences' we really mean play! Young mammals of all different species have an in-built drive to play.

For a start, play is fun, absorbing and all about building relationships with people around you. But more than that, play has been shown to help build the brain.

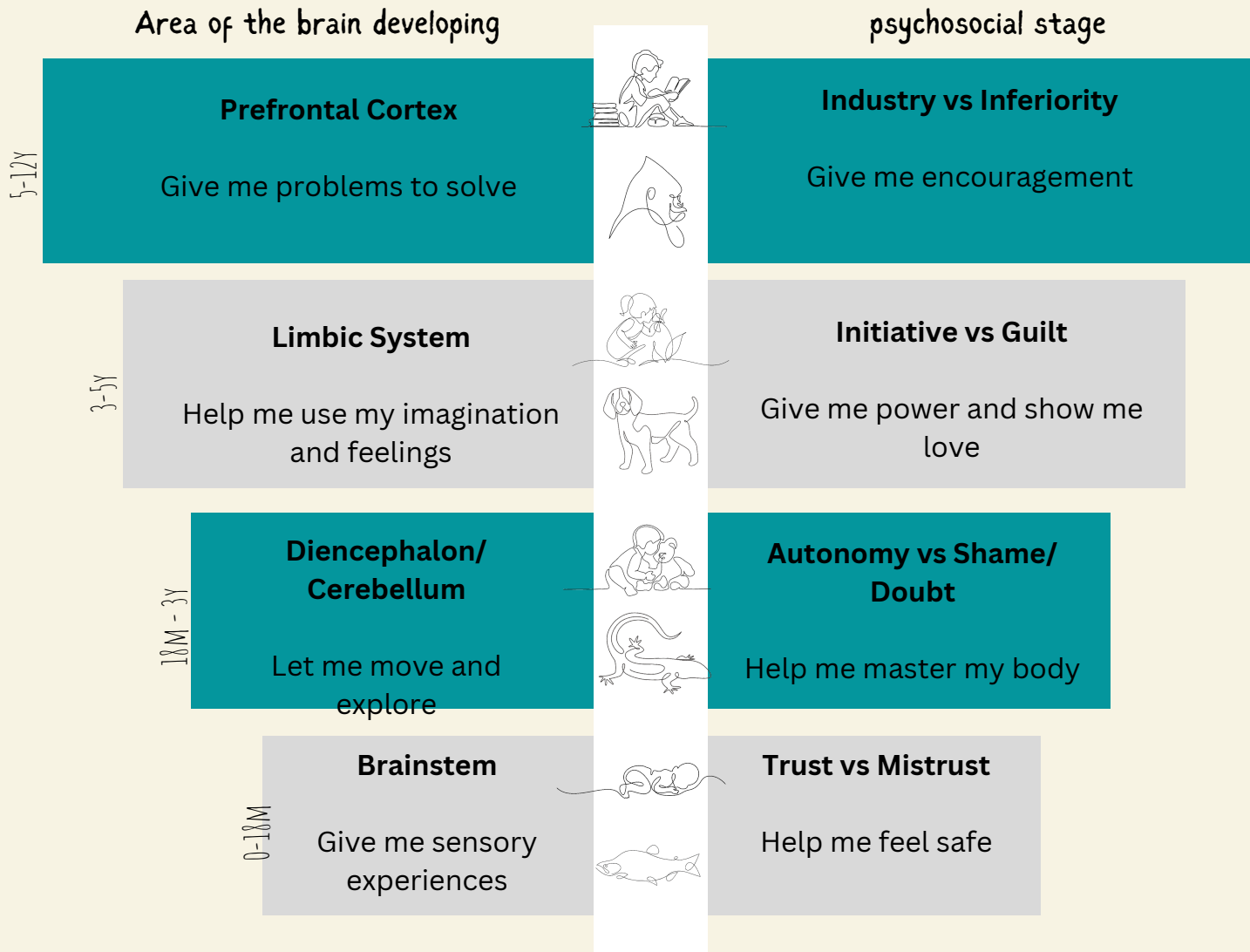
Animals that play more have bigger cortexes. Play stimulates neural connections in the limbic system and the pre-frontal cortex. The time that mammals play the most is linked to when there is the most growth in the cerebellum, and play changes as different areas of the brain begin to develop.

Play is thought to shape neurons in two main ways: training the brain to respond with movement (like in play fighting), and preparing the brain for unexpected events (like social situations).

So to build a beautiful, integrated brain, your child needs to play.



HOW DO WE HELP A BRAIN GROW?



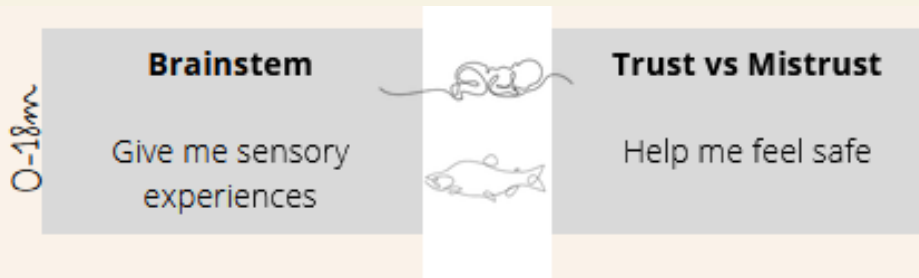
You can support the integration of your child's brain and their social development by providing social play experiences.

The key ideas for what kind of play experiences you can provide at each stage are listed in the graphic to the left.

It is important that play activities target the area of the brain that is developing at each stage. If we pitch our play activities too high, children won't be able to learn.^{4,5} Remember that relationships are also important, so play needs to be with you, family or friends, depending on which stage the child is at.

In the pages that follow, you'll find more specific play activities that support development at each stage.

NB. all play activities are my own ideas integrating the references cited above, and including (17).



At this stage your baby's brain soaks in all the sensory information it can. This doesn't mean you need to overload them with 'enrichment'. The most important thing at this stage is YOU, so be present, and make yourself your baby's favourite toy. Sing to them, play tickle games and dance with them against your chest. Build body awareness by swinging, rocking, patting, row boat games, and flying your child in the air. Allow your child to see your face and exaggerate your emotions as you play. Even the mundane tasks of nappy changes and bath time are sensory experiences for your baby, so take the time to sing, massage your baby with gently scented oils/lotions, or play peek-a-boo.

Key relationship: Primary caregiver



This Little Piggy

Lay your baby down in front of you. Gently wiggle their toes as you sing This Little Piggy (lyrics can be found online). Pause before you tickle gently at the end. Use your face to show baby joy and excitement.



Hey Dee Ho

Place your baby in a blanket and with a partner gently lift each end to cradle baby. Make sure baby can see your face. Gently swing the blanket while singing 'Hey Dee Ho' (lyrics can be found online). You can also sing this while rocking, or on a baby swing.



Up in the Air

Lying on your bed, bring your knees to your chest and pop baby tummy down on your shins, so you are face to face. Holding them for support, rock your knees side to side to 'fly' baby. You can sing Up in the Air or Fly a Kite (lyrics can be found online).

BRAIN BUILDING SUPERSTAR #1

Playdough



Use scented dough, doughs of different textures, like cloud dough, or mix crunchy things through, to allow infants to explore textures and scents.



Playdough is great for developing fine motor skills. you can hide small toys or objects in the playdough and have your child dig them out, or provide plastic scissors or shapes to cut the dough with.



Use playdough as a prop in imaginary play. It can become food, a fairy garden, a tropical island, or an alien world. You can also create your own characters to feature in stories you tell together.



Playdough can be used to support your child's learning. Cut ten shapes and then smash three to see what 10-3 makes. Or, use blobs of playdough to squish as you hear each sound in C-A-T.

18m - 3y

Diencephalon/ Cerebellum

Let me move and explore



Autonomy vs Shame/ Doubt

Help me master my body



Now is your toddler's chance to prove they can do things all by themselves! Their brain is working on movement, fine motor skills, balance and coordination. Allow your child to take risks whilst setting boundaries and keeping them safe. Rough and tumble play, and jumping off rocks or the bed into your arms will give them a sense of strength and how to use their body. Hide and seek and riding a bike will allow them to feel independent. Give opportunities to use their motor skills, like balancing stones, construction toys, dancing, yoga and ball games. Craft will support fine motor skills, and being able to use the tape, glue and scissors by themselves will promote autonomy.

Key relationship: Immediate family



Obstacle Course

Set up household items as obstacles for your toddler. Include risk taking opportunities like leaping from one chair to another. As your child's imagination grows you can change the game to Floor is Lava.



Rice Tub

Give your child opportunities to develop their fine motor skills by filling a tub with rice and hiding small objects inside. You could use counters, small animal toys or natural items like seed pods. Give your child tongs or large tweezers to remove the items.



Build a Fort

Building a fort gives your child an opportunity to use their gross motor skills, but also provides them a place to hide away from you and invite you into their space when they wish. Build forts from large boxes, chairs and blankets, or large sticks in bush settings.

BRAIN BUILDING SUPERSTAR #2

Painting



Paint can be a whole body experience for infants who are sitting up. You can make edible paints by mixing food colouring into natural yoghurt. Delight in your baby as they become a gorgeous mess.



Try using unusual painting tools like leaves and pinecones, or the wheels of toy trucks. You can also try different body positions, like painting on the window, or on a piece of paper stuck under a table. For some extra fun, you can smash blobs of paint with a plastic hammer and watch it splash.



As their limbic system grows, children can use paint to express their feelings. Use colours to represent different feelings, like red for anger and blue for sadness. Use "tell me about it" as a prompt for them to construct a story from their painting.



Encourage art as a way to journal about your child's day and express the new ideas they are coming up with. Painting can be used to create plans for things they would like to build.

3-5y

Limbic System

Help me use my imagination and feelings



Initiative vs Guilt

Give me power and show me love



At this stage your child's brain is seeking connection and to understand the social and emotional world. Now is when friends and playdates become important. They will use imaginative play to explore social roles, play with emotions, and understand consequences in a safe environment. Pretend play is king in this stage, so go with whatever story your child wants to play out. You can also create stories through art and craft, or telling your own stories together. This stage is about understanding how to have power and how we use this in life, so children will enjoy role reversals in play (you're the baby, they're the parent). This is their chance to try out different emotions, so allow them to play at being angry and fighting, while maintaining boundaries.

Key relationship: Wider family, friends



Superheroes

Playing at superheroes or any good vs bad guys game allows your child to explore morality and emotions.

Allow your child to control the narrative, and support them to understand the emotions that arise



Mummy/Daddy Robot

Give your child power by becoming a robot that does whatever they want. Play up the natural consequences of what they are asking you to do.



Puppets

Make your own puppets using paper and paddlepop sticks, and put on a puppet show together. Narrate the feelings the puppets display, but try not to moralise.

BRAIN BUILDING SUPERSTAR #3

Pretend Play



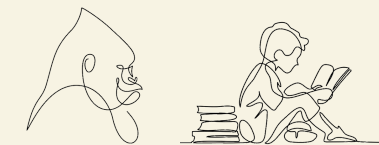
Small babies do not have the symbolic skills to pretend, but as they grow towards their first year, children can pretend basic functional tasks, like feeding their teddy, or preferably, feeding Mum or Dad!



Children in the autonomy vs shame/doubt stage will enjoy pretending things that allow them to practice their independent living skills. Allow them to pour the 'tea' for your tea party, or take your temperature in a doctor game.



This stage is where the magic happens with pretend play. Go with your child as they play out different stories, follow their lead and see where the story takes you. Play up big emotions, and allow them to take on powerful roles.



At this 'thinking' stage pretend play can include problems for the protagonists to solve. Encourage your child to take another person's perspective when playing to develop their empathy.



5-12y

Prefrontal Cortex

Give me problems to solve



Industry vs Inferiority

Give me encouragement



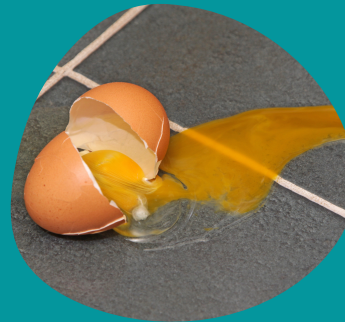
As your child's cortex develops their play will move to seeking knowledge and solving problems. Now is the time to encourage and praise your child for the things they do well, and support them to build their skills in areas they struggle with. Doing puzzles, building with construction materials like lego or boxes, and playing board games will encourage your child's cortical development. Your child will develop their special interests and talents, so give them opportunities to exercise these in playful ways, whether art, music, maths games, word games, or sports.

Key relationship: Teachers, school friends



Marble Run

Marble runs are fun to watch, and can be built in any number of ways. You can get commercial marble run kits, but to increase the challenge level, create runs from recycled packaging, like empty toilet rolls and foil tubes, taped to a window.



Egg Drop

This classic building challenge both exercises your child's problem solving and is stacks of fun. Challenge your child to build a safe container for an egg so that it won't break if you drop it from a balcony, or play catch with it.



Cards

A deck of cards can be used in lots of different ways during this stage. You can start with simple matching games like snap and concentration, and build to more complicated games like war and go fish. Poker optional!

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