



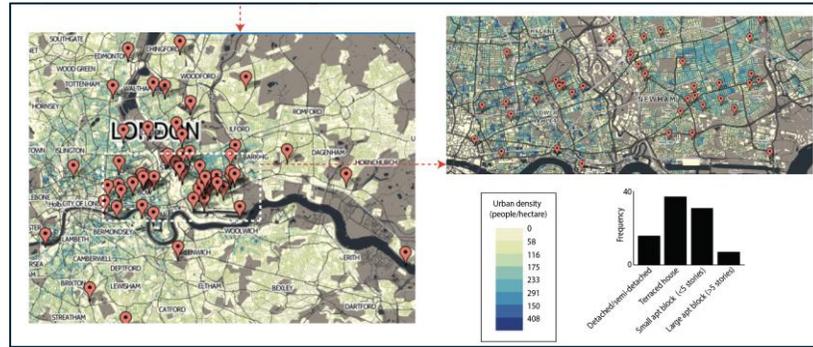
INSTITUTE FOR THE SCIENCE
OF EARLY YEARS & YOUTH

Born to Learn: Boosting young brains through everyday moments

Prof Sam Wass and Dr Gemma Goldenberg



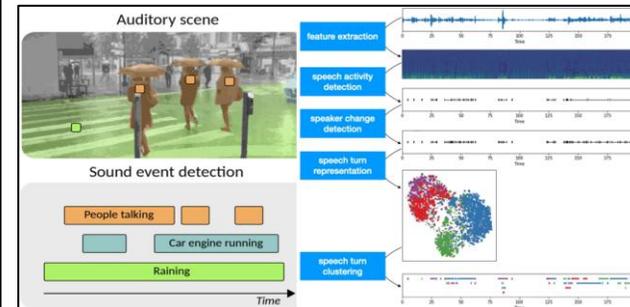
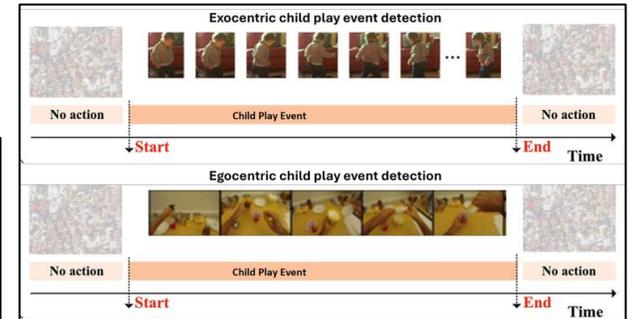
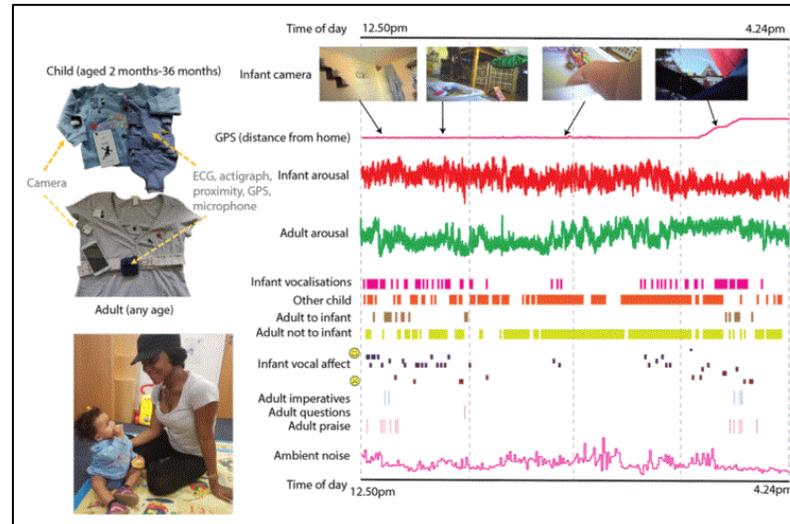
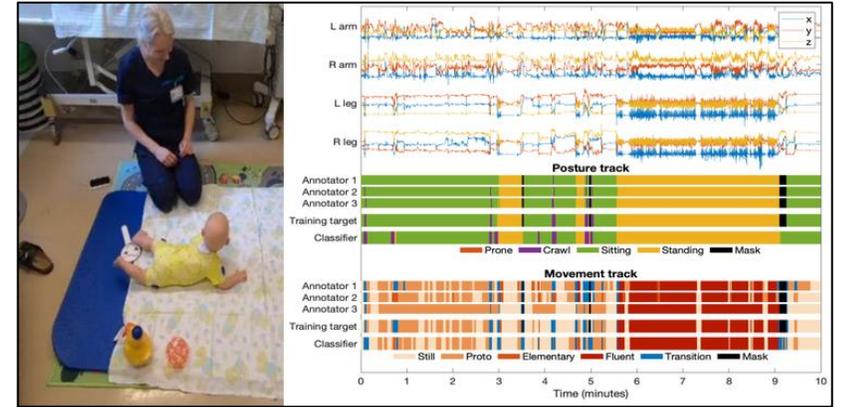
INSTITUTE FOR THE SCIENCE
OF EARLY YEARS & YOUTH



www.isey.org



INSTITUTE FOR THE SCIENCE OF EARLY YEARS & YOUTH



Research projects

Also Autism, ADHD, anxiety



European Research Council



European Cooperation in Science & Technology



Research Foundation - Flanders



Medical Research Council



TÜBİTAK
Scientific and Technological Research Council of Türkiye



The Mercers' Company



Royal Institute of Art in Stockholm



A LONDON DOCTORAL TRAINING PARTNERSHIP

London Doctoral Training Partnership



University of East London



Economic and Social Research Council



Türkiye Scholarships Burslari



London Interdisciplinary Social Science Doctoral Training Partnership



Marie Curie postdoctoral fellowship



Leverhulme Trust



www.isey.org/projects

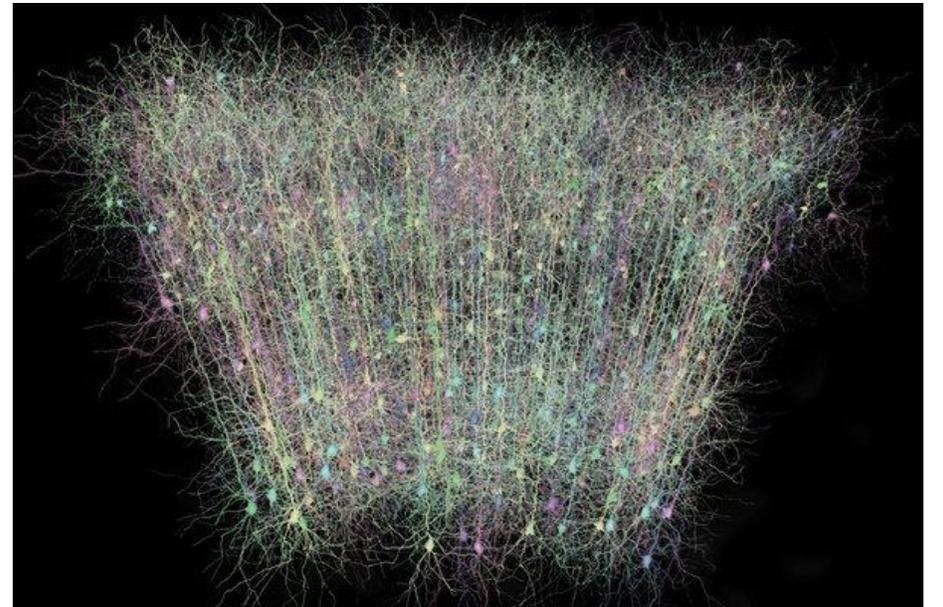
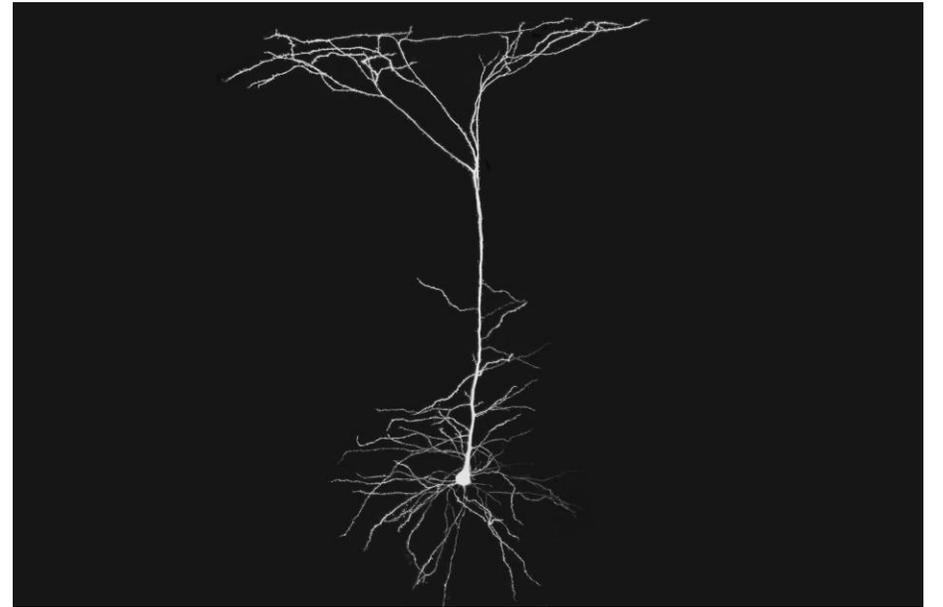
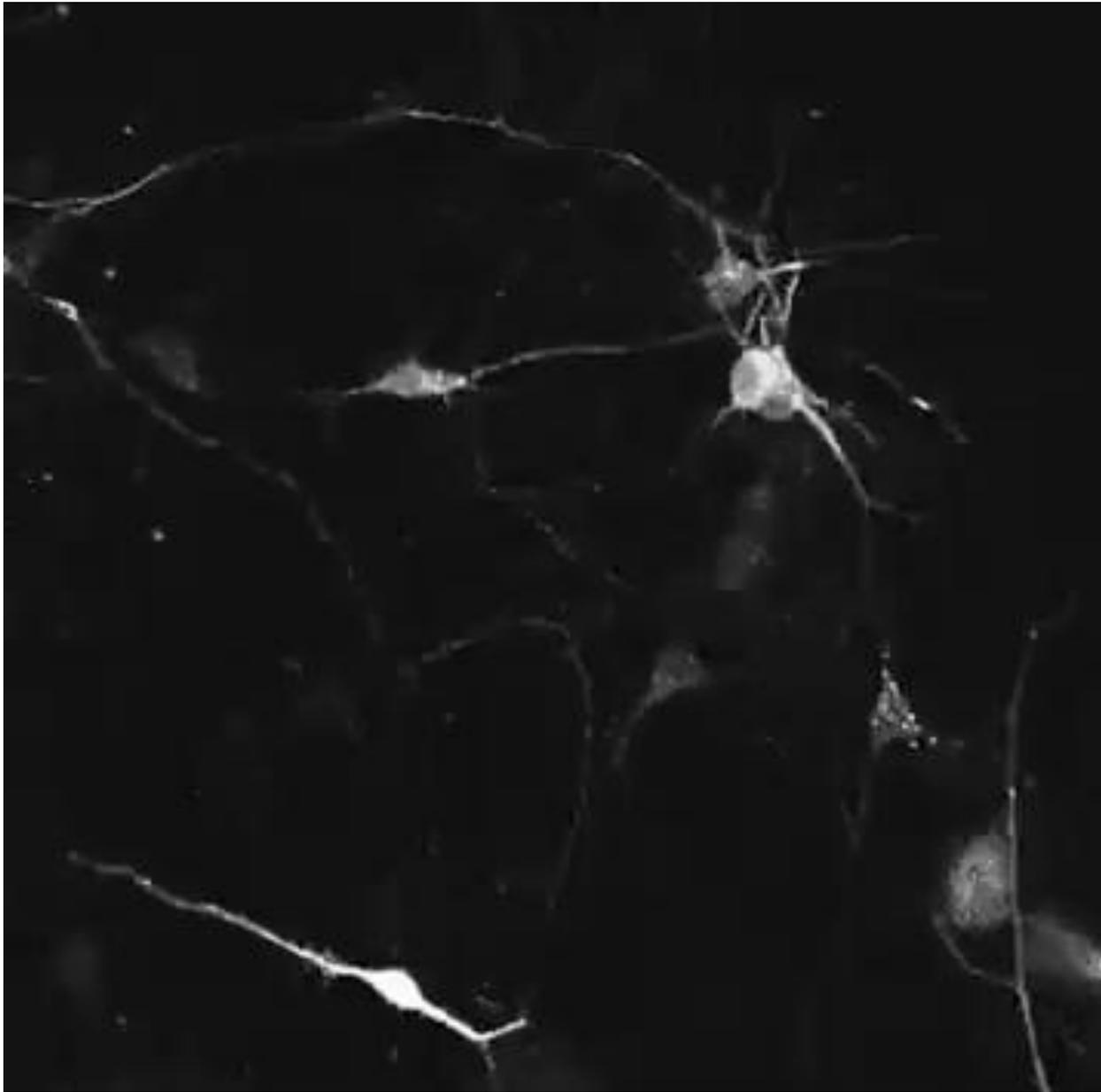


Consultancies



Policy advice





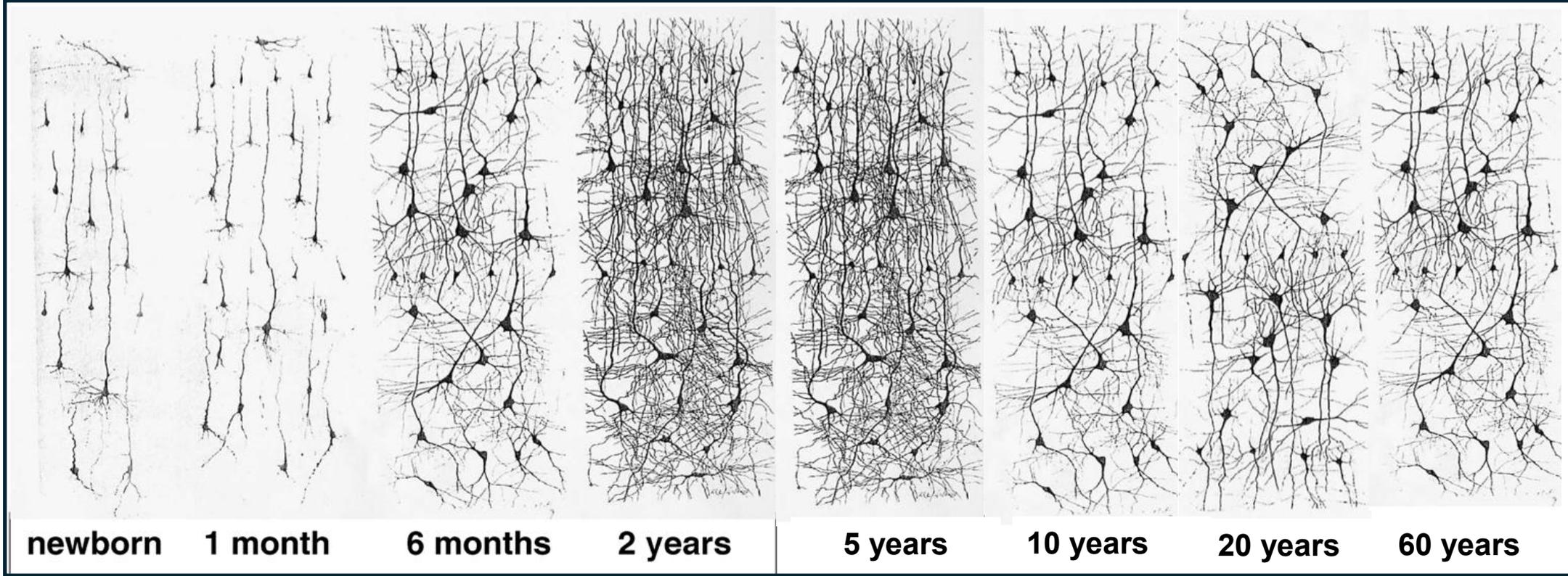
At what age does
our number of
brain connections
peak?

A



B







Pa – to?

Ve – ko?

De – ro?

What we'll cover:

- The amazing capabilities of young brains, and how they differ to older ones
- What young brains really need
- How you can use this in your everyday practice to support development



Some of the answers will be surprising:

- When it comes to young brains – less is more
- Don't feel you need to give them something new each day
- Simple and slow is the way to go!



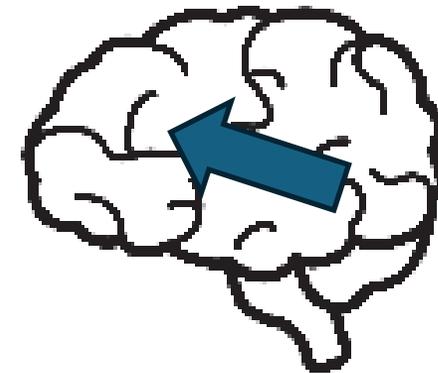
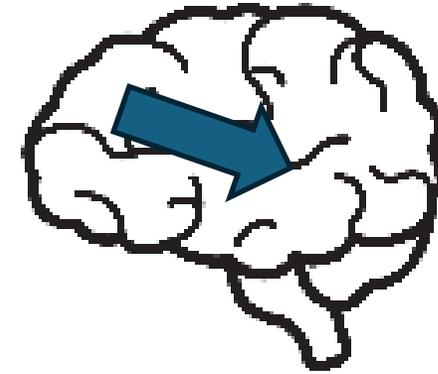
Supercharged young brains



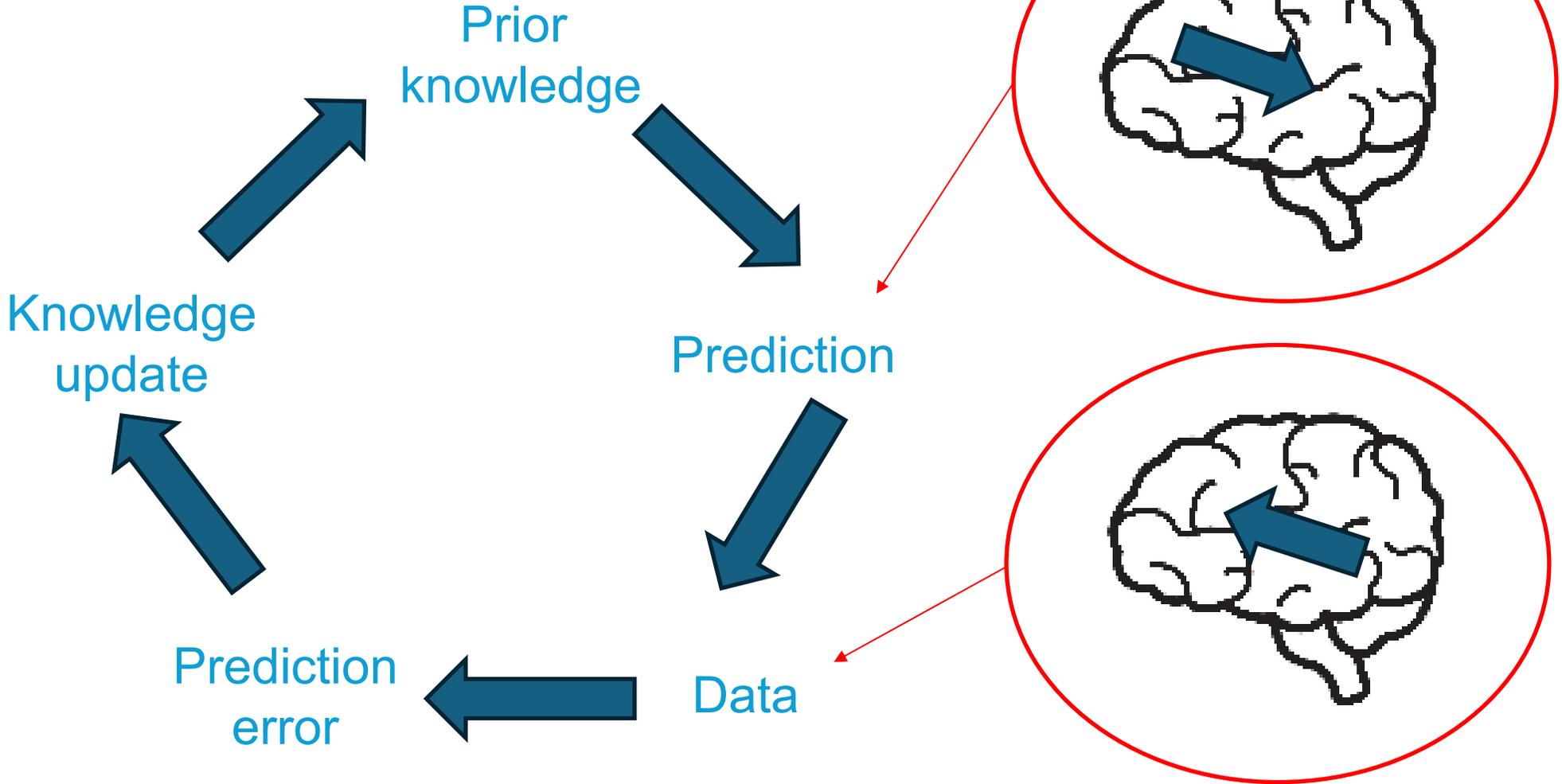
How **all** learning works



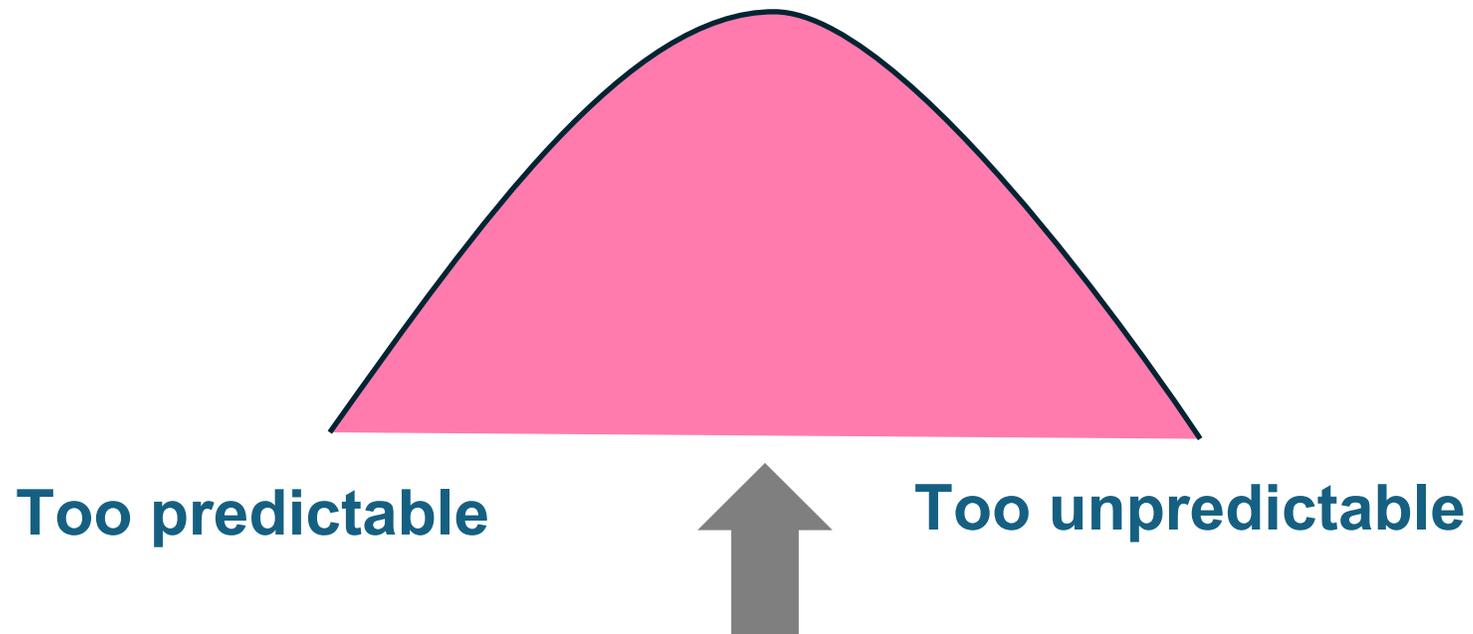
How **all** learning works



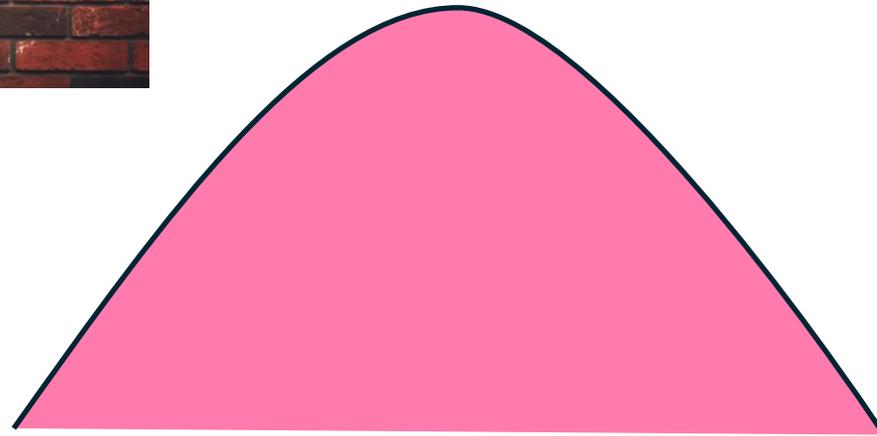
How **all** learning works



We learn best from situations where we can predict what will happen next **sometimes** but not **always**.



We learn best from situations where we can predict what will happen next **sometimes** but not **always**.



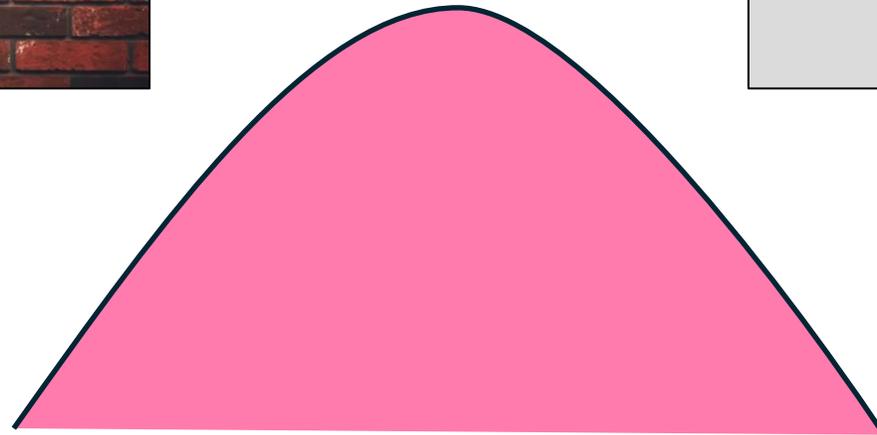
Too predictable

Too unpredictable

We learn best from situations where we can predict what will happen next **sometimes** but not **always**.



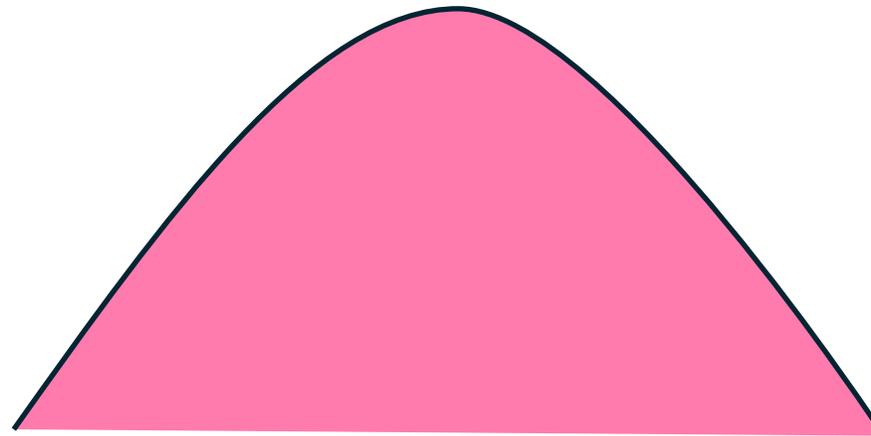
$$y = 1 - \frac{f^n \left[\frac{s \cdot l}{f} + \left(\frac{20}{f} \right)^w \right]}{20^n}$$



Too predictable

Too unpredictable

The Goldilocks zone



Too predictable



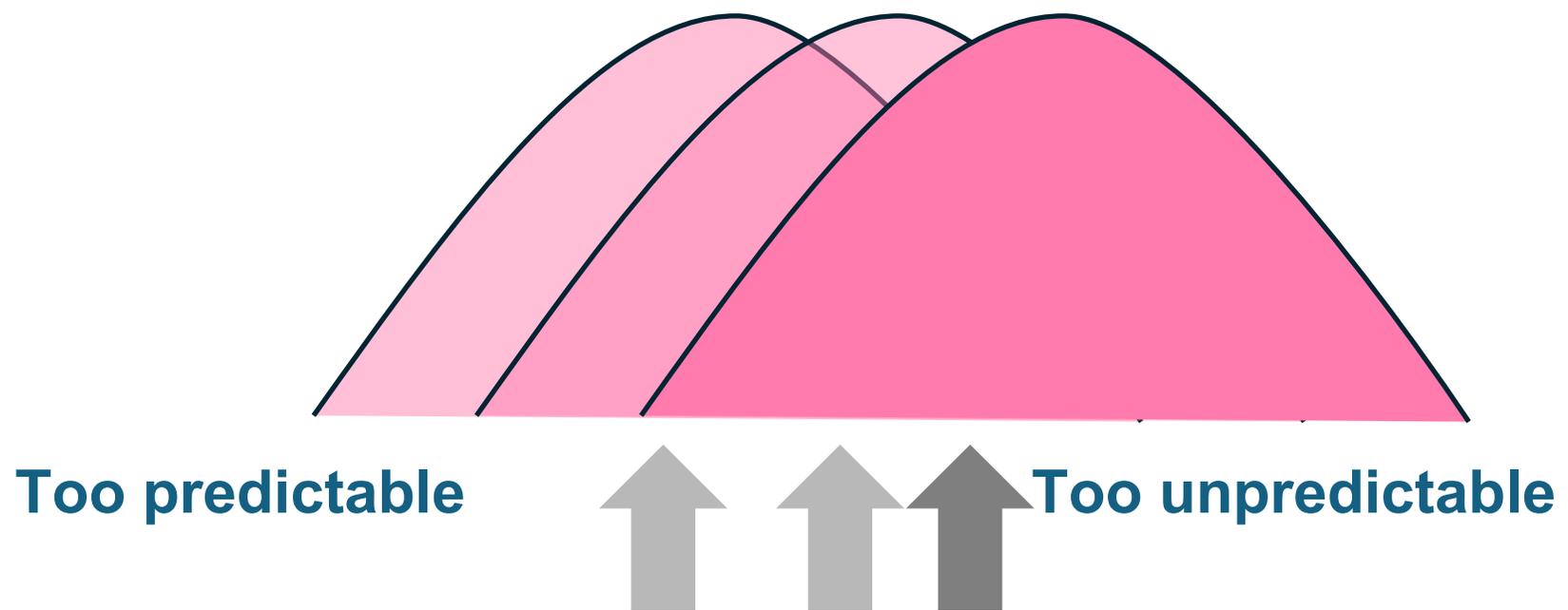
Too unpredictable

Young brains learn best from predictable experiences



Over time, with practice, our brains get better at making predictions

The Goldilocks zone keeps moving

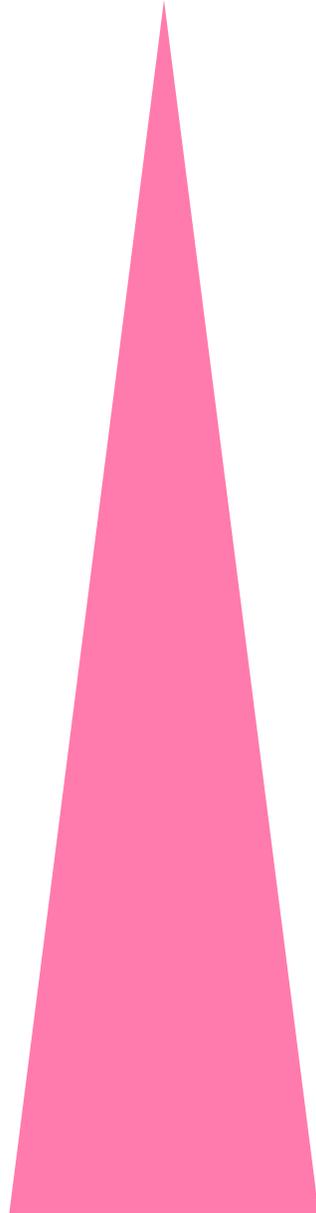


Early life

Learn best from highly predictable interactions

Later childhood

Learn best from more unpredictable interactions



List 5 other things that are too predictable for adult brains
but just right for younger brains



What do young brains really need?

Repetition

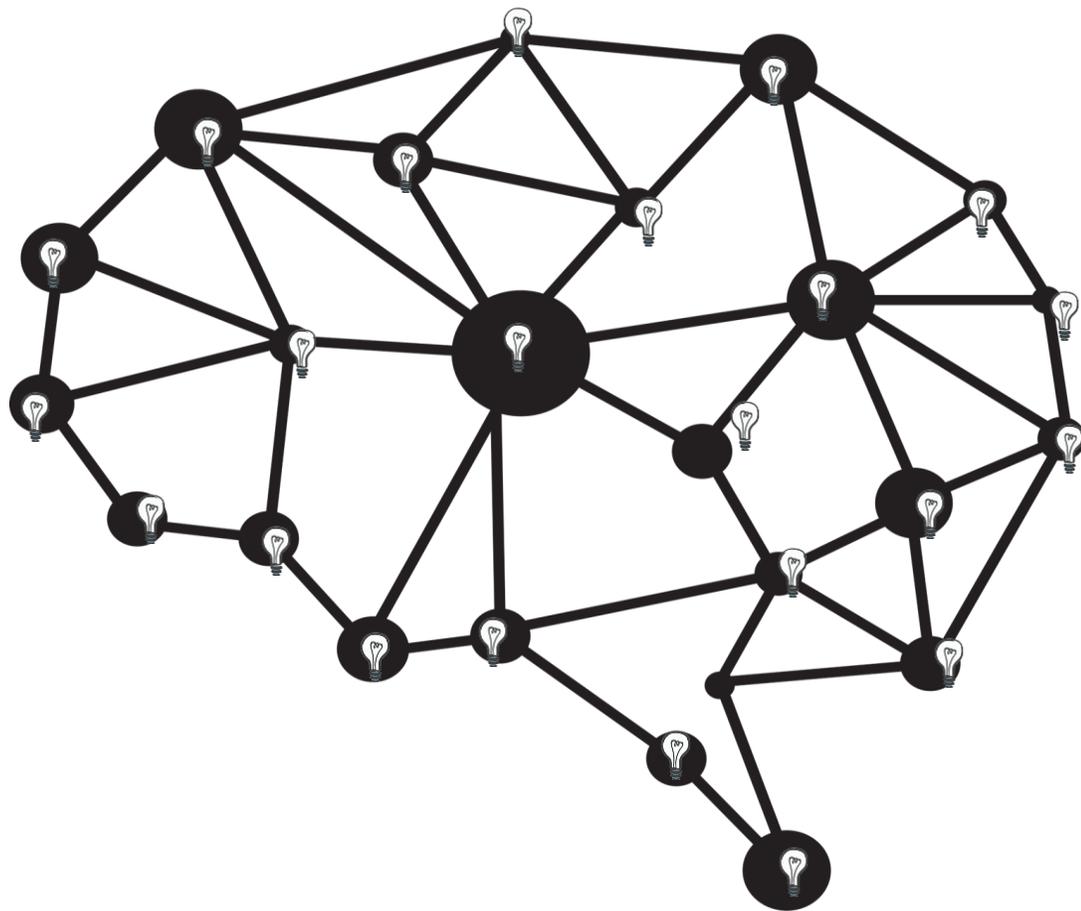
Rhythms

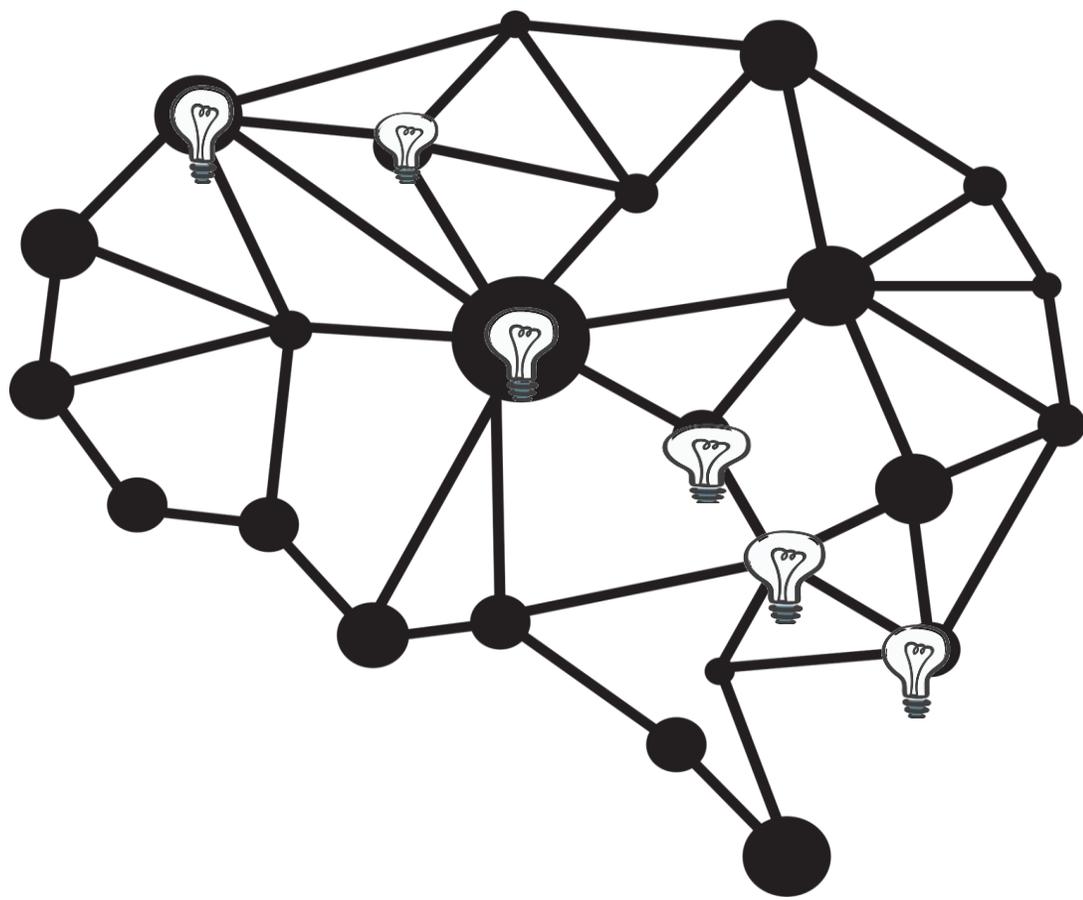
Clarity

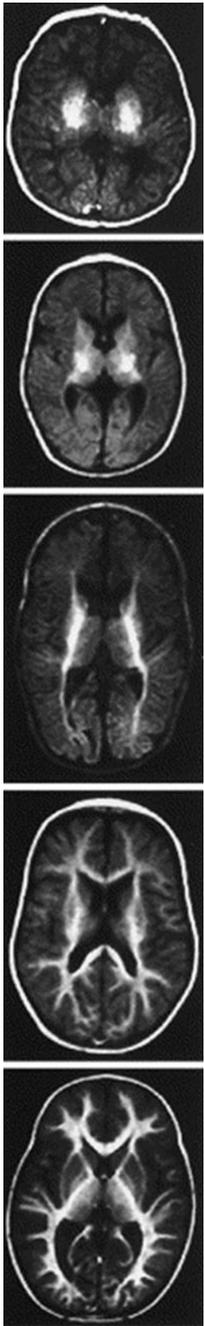
Slow Pace



Repetition







Myelination – building white matter

- Repetition and rehearsal
- White matter
- More efficient processing
- Faster communication





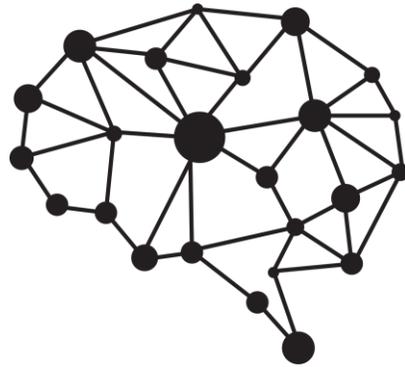
Again, again!

- Why do children like to hear the same story, or watch the same episode of a tv programme over and over again?



Repetition

Remember that children's brains are overconnected. They need repeated exposure to the same tasks to learn which neurons should be activated each time.



What does this mean practically?

If a child is still repeating something, they are still learning from it.

Allow for repetition of the same games, stories, toys, and conversations.

Notice the learning underneath repetitive behaviours

Provide opportunities for over learning and mastery – resist the urge to provide new things every hour!

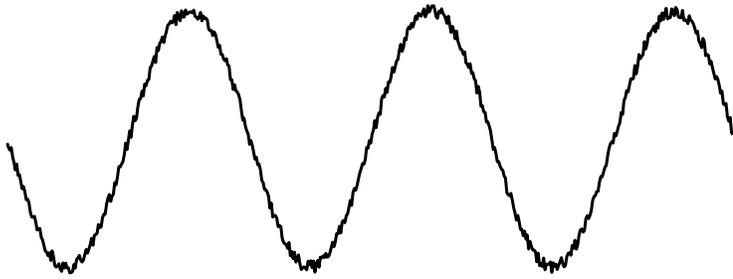


Rhythms

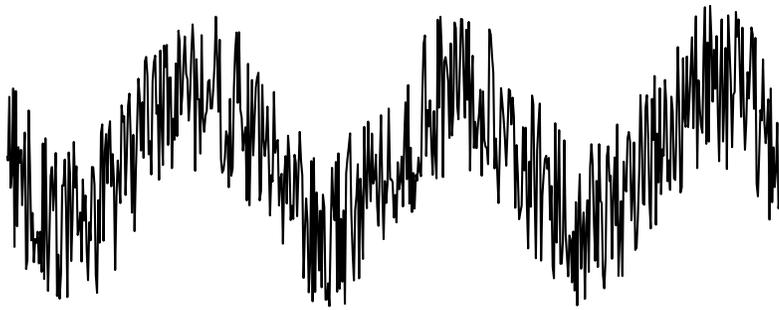
Brains are rhythmic

Young brains are messily rhythmic

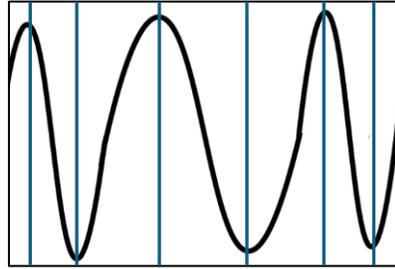
Adult



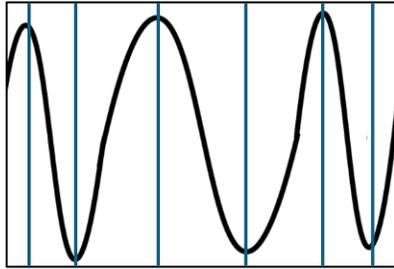
Child



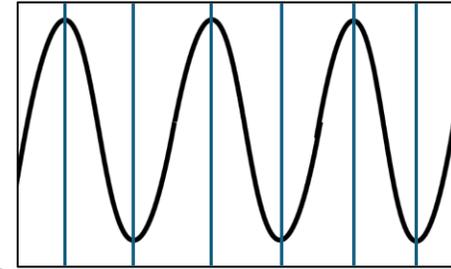
Irregular



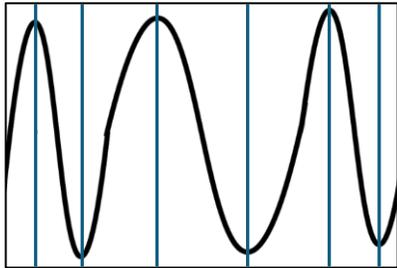
Irregular



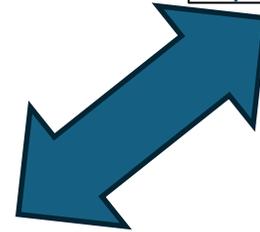
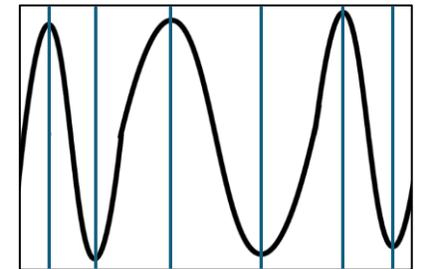
Regular



Irregular



Irregular



Rhythms

Brains are rhythmic

External rhythms provide a structure

Rhythmic structures can nudge a child's brain and body into a more stable, adult-like rhythm



Back through the mud! Squelch squerch! Squelch squerch!



Back through the river! Splash splosh! Splash splosh! Splash splosh!



Back through the grass! Swishy swashy! Swishy swashy!



Subsecond
- speech
rhythms
(volume)



Back through the mud! Squelch squerch! Squelch squerch!



Back through the river! Splash splosh! Splash splosh! Splash splosh!



Back through the grass! Swishy swashy! Swishy swashy!



Subsecond
- speech
rhythms
(volume)



Back through the mud! Squelch squerch! Squelch squerch!



Back through the river! Splash splosh! Splash splosh! Splash splosh!



Back through the grass! Swishy swashy! Swishy swashy!

A photograph of a man in a dark sweater and pants, standing and performing a physical movement. He is leaning forward with his arms crossed in front of him, and his hands are positioned as if he is about to perform a specific gesture or dance move.

Physical
movements

Subsecond
- speech
rhythms
(volume)

Breathing



Back through the mud! Squelch squerch! Squelch squerch!



Back through the river! Splash splosh! Splash splosh! Splash splosh!



Back through the grass! Swishy swashy! Swishy swashy!

A photograph of a man in a dark grey sweater and dark trousers. He is standing and looking down, with his arms crossed in front of him. He appears to be performing a physical movement or exercise, possibly related to the 'Breathing' section.

Physical
movements

Subsecond
- speech
rhythms
(volume)

Breathing



Back through the mud! Squelch squerch! Squelch squerch!

Back through the river! Splash splosh! Splash splosh! Splash splosh!

Back through the grass! Swishy swashy! Swishy swashy!

Physical
movements

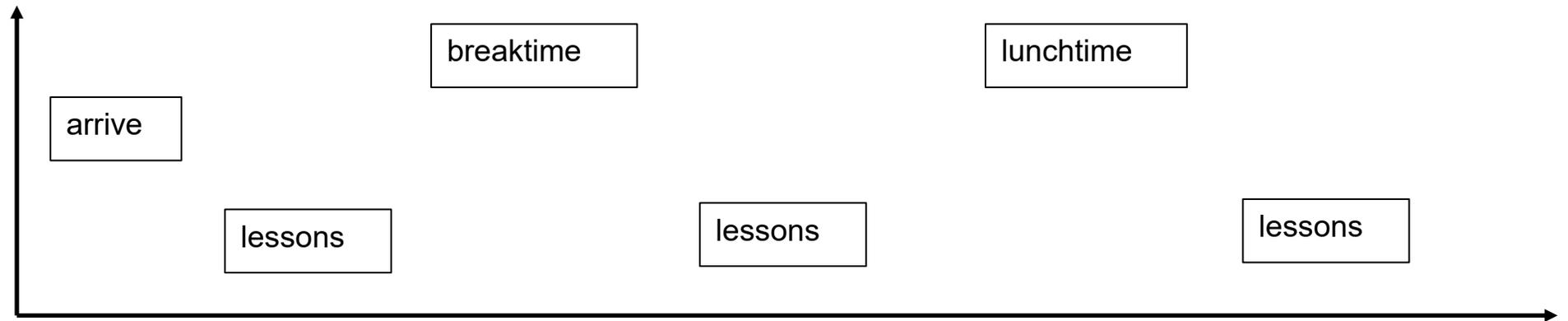
Group
rhythms

Rhythms

Bodies are rhythmic

External rhythms provide a structure

Rhythmic structures can nudge a child's body into a more stable, adult-like rhythm



Rhythms

What opportunities to build rhythms and repetition could you build into your practice?



Clarity

Tell the person next to you – what
did you have for breakfast this
morning?



Clarity

The younger children are, the quieter their environment needs to be for them to hear speech clearly....



Clarity

Lots of research studies have shown that noise hinders language development....

Toddlers struggle to even recognise their own name when there's speech in the background.
(Newman, 2009)

In noisy preschools where children can't properly listen to other's speech, their own language acquisition and reading development can be affected (Maxwell and Evans, 1999)



a



b

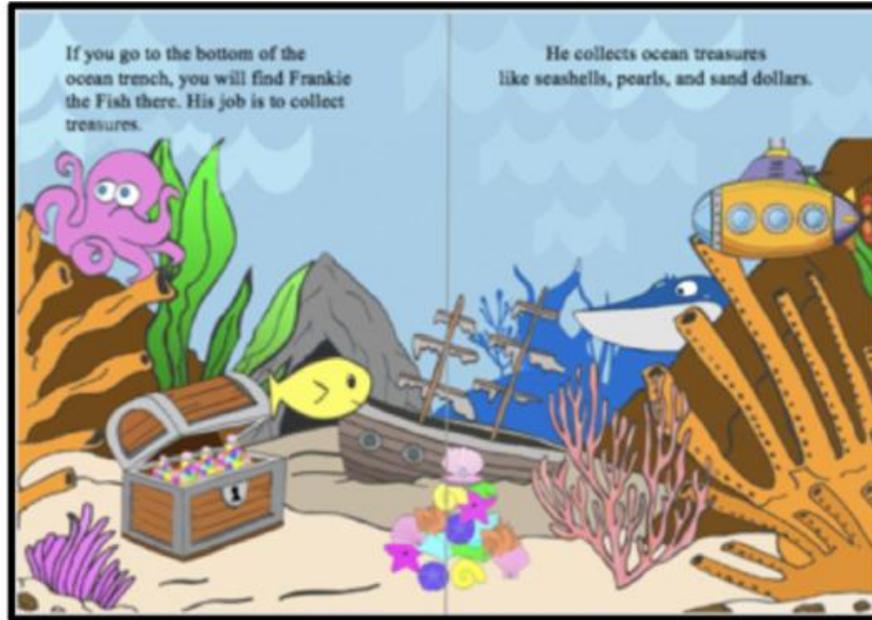


Wall displays have been found to be a distraction for over 85% of children in studies - leading to more time off-task and lower learning outcomes

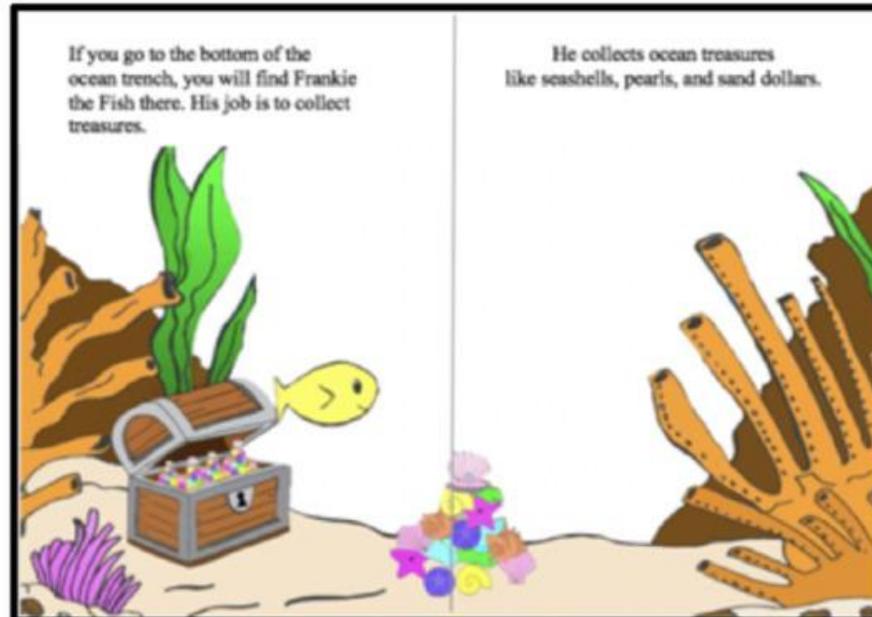
(Fisher 2014; Hanley et al, 2017)



a



b



Eng et al, 2020

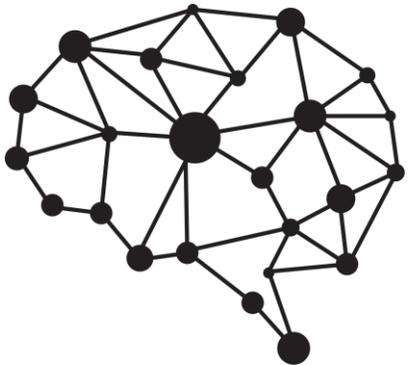




Clarity

Children need a clear signal (auditory or visual) without distractions.

This helps support focus and shows them what they should be paying attention to.



What does this mean practically?

Where possible, reduce background noise (especially during language rich activities) and remove visual distractions.

Turn off televisions and radios unless actively listening

Keep learning and play areas clutter free

Remove distracting patterns or illustrations from materials you create



Pace



Adults - 10 frames per
second

15 months olds - 1 frame per second

10 x slower
than an
adult!

6 month olds - 1 frame per 2
seconds

20 x slower
than an
adult!

Adult sees...



Baby sees...



Hello!

How are you?

My name is X.



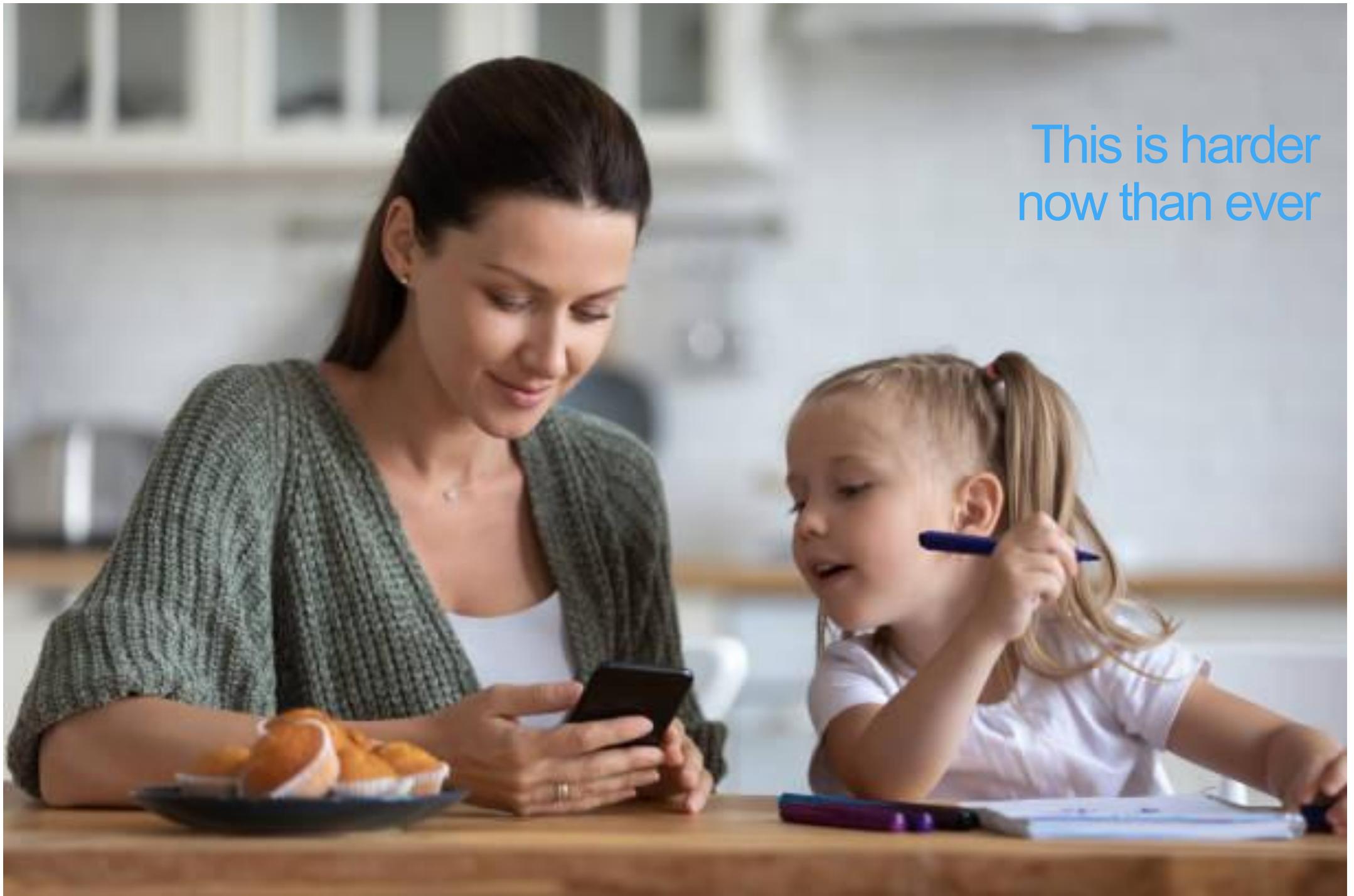
Slow down your.....

*Slow &
Steady*

Speaking
Reading
Songs
Reactions
Transitions



This is harder
now than ever



Try to let the child you are interacting
with, set the pace



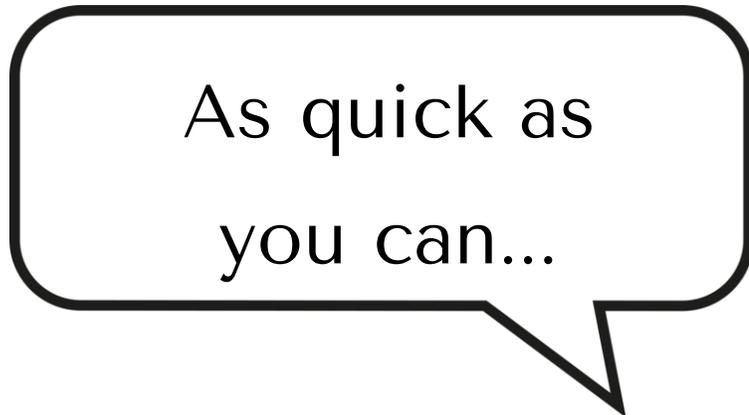
Hurry up!



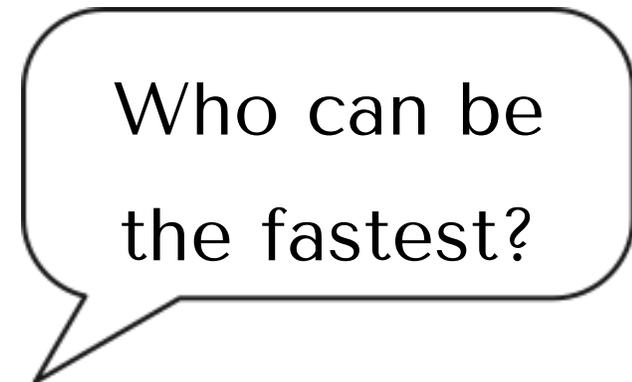
We don't
have time for
that



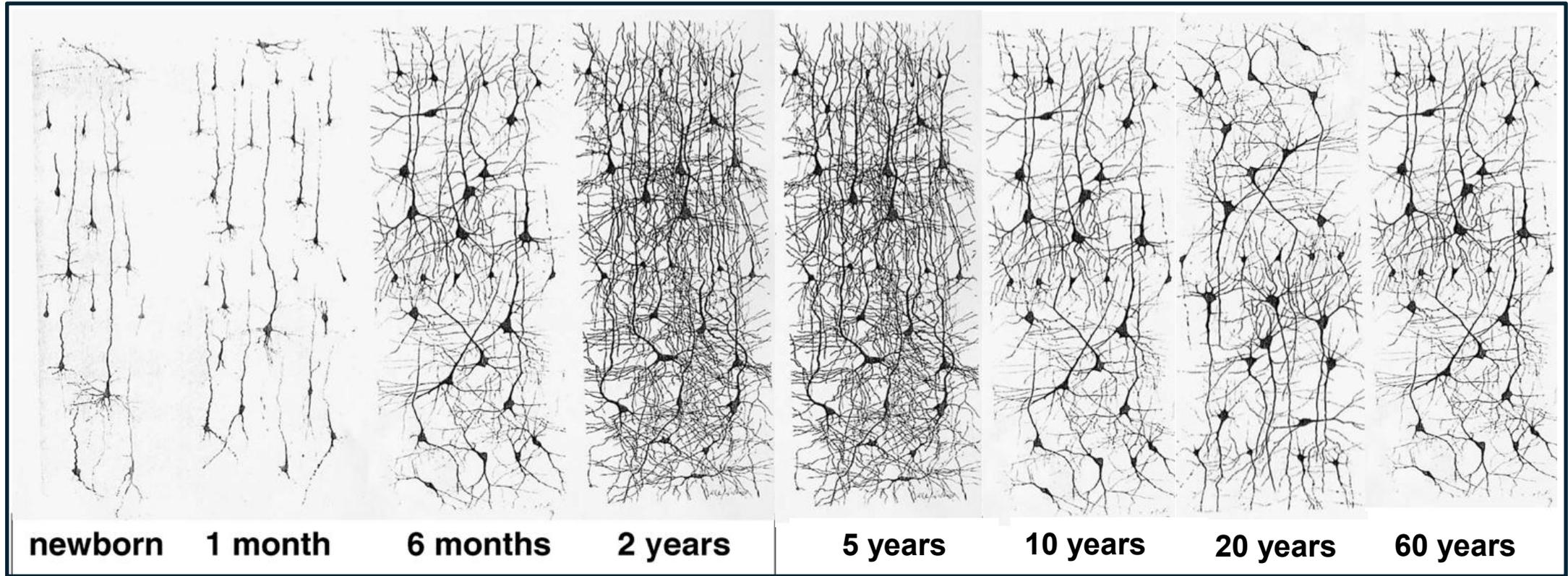
Come on,
chop chop!



As quick as
you can...



Who can be
the fastest?



↑
Learning maximised
Instability maximised



Some of the answers will be surprising:

- When it comes to young brains – less is more
- Don't feel you need to give them something new each day
- Simple and slow is the way to go!



What do young brains really need?

Repetition

Rhythms

Clarity

Slow Pace



Thank you for listening

www.isey.org

s.v.wass@uel.ac.uk

g.goldenberg@uel.ac.uk

