

BRAIN ARCHITECTURE

Early experiences build brains



The experiences we have in life play a powerful role in shaping our **Brain Architecture**.

Building a brain can be thought of like building a house. It's a step-by-step process where more complex structures are built on simpler ones.

Just like a house needs a solid foundation to support the walls and roof, a brain needs a solid foundation to support all future development, including lifelong learning and skill building.

Experiences in the early years of life, like childhood and adolescence, are especially important, as they lay the base for everything that follows. However, our brains continue to change across our entire lives.

Safe, stable, supportive relationships and *Serve and Return* interactions are the bricks that build brains, leading to better physical, mental, and social well-being throughout life.

IN PRACTICE: BRAIN ARCHITECTURE

As brains develop in a step-by-step process, it's important to start with what a child *can* do and then build from there. It's like adding a more complex structure on top of a simpler one. For example:

For a baby learning different movements, start by placing a toy in their hand.

- ↳ **Build from there:** Put the toy within their sight but slightly out of reach. If the baby shows interest but doesn't quite grab it, move the toy a little closer so they can touch it. Next time, help a bit less—encourage touching the toy instead of moving it closer for them.

For a young child learning how to get ready for school, try developing routines. Their morning routine might include getting dressed, brushing their teeth, packing their bag, and eating breakfast before heading out the door. Start by doing these tasks in the same order every day.

- ↳ **Build from there:** Ask the child if they know what comes next in their routine rather than telling them what to do, or try asking questions that help them remember what needs to be done, like "What do you need to pack in your bag today?"

For a teen learning about their interests and developing a sense of identity, try encouraging them to explore a new activity (e.g., school play, sports team).

- ↳ **Build from there:** Offer to help them practice (e.g., run lines or drills) and set goals. As they become more involved in the activity, give them opportunities to be more independent (e.g., encourage them to coordinate with a friend to practice, have them take the lead on updating their goals).

Building strong **Brain Architecture** supports lifelong well-being.



TOXIC STRESS

A force that disrupts Brain Architecture



Stress shapes our *Brain Architecture*. The impact of stress on our brain depends on the intensity, how long it lasts, and whether we have support to help us through.

Not all stress is bad. Experiences that create “Positive Stress,” like meeting new people, or starting school or a new job, develop important skills and prepare for future challenges.

“Tolerable Stress” occurs during difficult experiences, such as losing a loved one. These experiences can cause a strong stress response, but with safe, stable, supportive relationships around us, we can manage these challenges without experiencing lasting harm to the brain.

Toxic Stress is different. It happens when we face repeated hardships without supportive people around to help us through. Things like abuse, violence, or unstable living situations can create **Toxic Stress**. Especially during childhood and adolescence, **Toxic Stress** can weaken our *Brain Architecture*, increasing the risk of future mental and physical health challenges.

Safe, stable, supportive relationships and *Serve and Return* interactions can help us to manage stress and build the skills and abilities we need to handle life’s challenges.

IN PRACTICE: TOXIC STRESS

When someone is experiencing positive stress, support might include:

- Talking through what will likely happen (e.g., we will walk to school, say goodbye when the bell rings, then you will go into the classroom, etc.)
- Reminding them they are being brave to face this new challenge
- Asking what they are most excited about
- Asking what they are worried about so that you can help identify ways to manage it
- Reminding them of your support, no matter what happens

When someone is experiencing tolerable stress, support might include:

- Giving them time and space to process their thoughts and feelings
- Listening to them without judgment
- Reminding them of the people who are and will be around to support them
- Supporting them in the healthy ways they choose to manage stress
- Regularly reaching out to check in and provide extra support
- Offering practical support based on what you know about them, such as making their favourite meal, dropping off groceries, or helping with everyday tasks
- Helping them access professional support

When someone is experiencing **Toxic Stress**, the same supportive relationships can help. Additional support might include:

- Helping them identify and, where possible, reduce or remove the source of **Toxic Stress**
- Taking steps to protect their safety and well-being, including reporting the source of **Toxic Stress** to the appropriate authorities when needed (e.g., child abuse or neglect)
- Helping them access professional or community support

Having support during difficult experiences can help us to manage stress and build resilience against future challenges.



AIR TRAFFIC CONTROL

The executive function system of the brain



Executive function skills are essential to our daily lives. They operate like an air traffic control system in the brain.

Think of a control tower at a busy airport. The air traffic controller helps guide planes safely as they arrive and depart, making sure everything runs smoothly. Our brains face a similar task when we do things like focus, make a plan, stay organized, and follow rules. **Air Traffic Control** skills help us to manage all of the demands in our mental airspace.

Air Traffic Control skills require a strong foundation of *Brain Architecture* to develop. We build these skills over time, and they're strengthened by safe, predictable environments with consistent routines.

Childhood and adolescence are particularly important times for building our **Air Traffic Control** skills. However, we can continue to use, practice, and strengthen this skillset across our entire lives.

IN PRACTICE: AIR TRAFFIC CONTROL

Air Traffic Control is a broad category of skills. Here are some activities, as well as one example of an **Air Traffic Control** skillset that is being built while engaging in the activity:¹

6–18 months old

- Peekaboo (involves paying attention in order to watch out for the “boo!”)
- Songs with hand motions, like Itsy Bitsy Spider (involves remembering a simple sequence of actions)

18–36 months old

- Musical freeze (involves being able to stop or pause)
- Sorting games (involves responding to changing situations, e.g., sorting by color and then by shape)

3–5 years old

- Helping with cooking (involves following steps and directions)
- Simple board games (involves taking turns)

5–7 years old

- Duck Duck Goose (involves focusing and acting once it's their turn)
- 20 Questions (involves remembering questions that have been asked and thinking flexibly about what to ask next)

7–12 years old

- Team sports (involves adapting quickly to fast-paced situations)
- Crossword puzzles (involves trying different options and persisting to find an answer)

Adolescence

- Study skills (involves breaking a big task down into something manageable)
- Dramatic theatre (involves remembering a significant amount of information)

Different activities help to develop different parts of our skillset. Taken together, strong **Air Traffic Control** skills help us to manage and navigate daily life.

¹ This list was adapted from the Center on the Developing Child at Harvard University's [Activities Guide: Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence](#)

SERVE & RETURN

Positive interactions build sturdy Brain Architecture



One way to build and maintain strong *Brain Architecture* is through **Serve and Return** interactions.

Think of **Serve and Return** like a tennis rally. Instead of hitting a ball back and forth, two people communicate back and forth by sharing facial expressions, sounds, words, or gestures.

When someone reaches out with one of these actions, they are “serving.” This may be a baby babbling, a toddler bringing over

a toy, a teen asking a question, or an adult smiling at someone. Responding to this action is “returning” the serve.

Serve and Return exchanges between a child and caregiver, when done regularly and thoughtfully, are the bricks that build a strong foundation of *Brain Architecture*. These responsive, back-and-forth interactions continue to be important throughout our lives, helping to support and maintain our health and well-being.

IN PRACTICE: SERVE & RETURN

Serve and Return with a baby may look like:

- **Serves:** babbling, staring at something, pointing to an object
- **Returns:** responding to the babbles, looking at what caught their attention, naming the object (e.g., “pen”, “ball”) or grabbing it to bring it closer

Serve and Return with a young child may look like:

- **Serves:** bringing over a toy or book, coming up with imaginary characters and stories, using facial expressions
- **Returns:** playing a game with the toy or reading the book together, acting out the imaginary characters, or matching their emotion (e.g., smiling to show excitement, opening mouth to show surprise)



Tip

Follow the child’s interest. If they bring over a toy, engage in *Serve and Return* related to that toy until their attention shifts somewhere else. Follow their lead into the next game.

Serve and Return with a teen may look like:

- **Serves:** making a comment or starting a conversation, physical proximity (e.g., hovering in the background), physical exclamations (e.g., sighing, laughing)
- **Returns:** engaging in conversation, acknowledging their presence with a smile or touch, asking “What is on your mind?” or “What are you laughing at?”

Serve and Return is everywhere—including between adults—from greeting the clerk at the grocery store to asking a friend about their day.

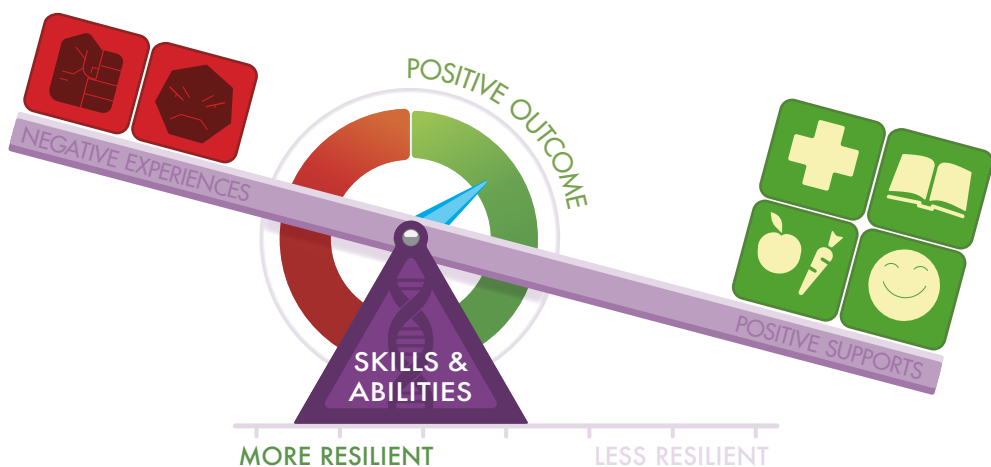
These interactions are the bricks that build brains.



AlbertaFamilyWellness.org/Serve-and-Return

RESILIENCE SCALE

Tipping the scale toward positive outcomes



Resilience is our ability to adapt and stay healthy, even in the face of adversity. The **Resilience Scale** shows how three things influence our resilience: negative experiences, positive supports, and skills and abilities.

Picture a beam on a fulcrum. Red boxes represent negative experiences and sit on the left side of the beam. Green boxes represent safe, stable, supportive relationships and environments and sit on the right.

The starting position of the purple fulcrum is partly influenced by our genes, but its position is not fixed. Our experiences and the skills and abilities we develop can change its position. Building strong skills and

abilities—like *Serve and Return*, *Air Traffic Control*, and the *Reward Dial*—moves the fulcrum to the left over time. In this position, there is less leverage to red boxes and more leverage to green boxes, which helps to tip the **Resilience Scale** toward positive outcomes.

When red boxes pile up without enough positive supports or well-developed skills and abilities, the **Resilience Scale** can tip towards poorer outcomes.

We can build resilience at any age. By reducing the burden of red boxes, adding green boxes, and strengthening our skills and abilities, we can all tip our **Resilience Scale** towards positive outcomes.

IN PRACTICE: RESILIENCE SCALE

There are three ways to build resilience: reduce negative experiences, add positive supports, and strengthen skills and abilities. The **Resilience Scale** can be used to reflect on how to build our own resilience, and the resilience of those around us:

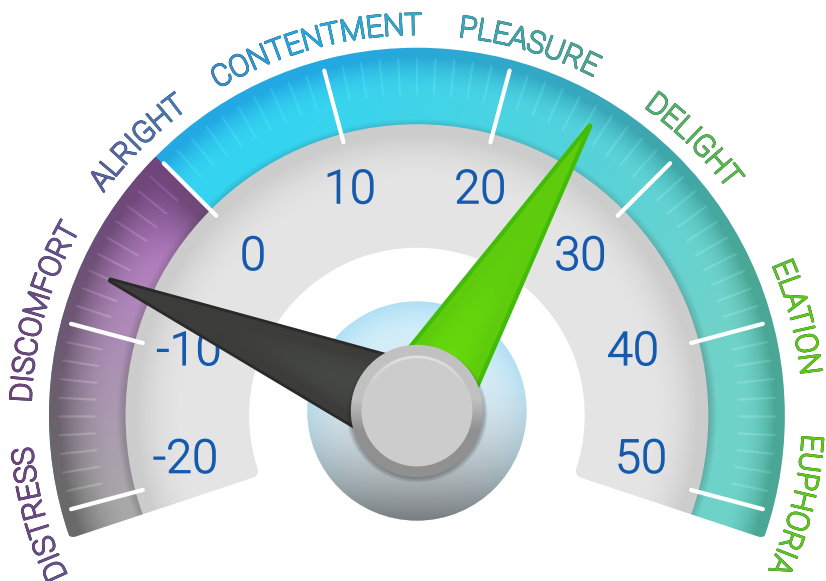
1. **Reduce the burden of red boxes.** See our *Toxic Stress* learning card.
2. **Add green boxes.** This may include joining a new community group (e.g., parent-toddler group, community café, volunteering), using a community space (e.g., library, parks), forming new connections and keeping in touch with friends, eating nutritious food, exercising, and getting good sleep.
3. **Shift the fulcrum to the left.** See our *Serve and Return*, *Air Traffic Control*, and *Reward Dial* learning cards for suggestions to build these skills.

Addressing all three parts of the **Resilience Scale** at the same time may feel overwhelming. Select the part of the **Resilience Scale** that you would like to work on first and identify steps you can take to build your resilience.



REWARD DIAL

The reward and motivation system of the brain



The brain's reward system is essential to daily life. It helps us enjoy things that are good for us, avoid things that are bad for us, and learn from our experiences. This system starts to develop early in life and continues to change throughout our lives in response to our experiences.

One way to think of the brain's reward system is as a **Reward Dial**—similar to a volume control on a stereo. Just like how moving the dial on a stereo changes the volume, our experiences can turn our **Reward Dial** up and down to change how strongly we feel reward.

When we have a strong foundation of *Brain Architecture*,

positive experiences turn the volume up and make the feeling of reward stronger, motivating us to repeat those same behaviours. Negative experiences turn the volume down and create feelings that are unpleasant, motivating us to avoid those same experiences in the future.

Toxic Stress can stop the dial from working as it should, affecting our motivation and enjoyment of experiences. However, safe, stable, supportive relationships and environments, along with *Serve and Return* interactions, help keep the **Reward Dial** working as it should across our lives.

IN PRACTICE: REWARD DIAL

Supporting the development of the **Reward Dial** could include:

For a baby:

- **Follow their lead.** Build activities around things that interest them (e.g., if they enjoy water, set up an activity to float and sink objects).
- **Prioritize Serve and Return interactions,** such as talking to them about what you're doing throughout the day. See the *Serve and Return* card for more ideas.

For a young child:

- **Give them choices.** Let children choose activities or how to do a task—having some input keeps them engaged. For example, ask “Do you want to read a book or do a puzzle?”
- **Challenge them “just right.”** Make tasks hard enough to require effort but easy enough that success is possible.
- **Praise their effort, not their talent.** Say “You worked really hard on that!” instead of “You’re so smart!” This builds their confidence and helps them handle tough challenges.

For a teen:

- **Stay connected.** Keep close relationships and talk openly—teens with strong family relationships take fewer dangerous risks. For example, while in the car, ask open-ended questions: “What was the best part of your day?” “What was challenging?” Show consistent interest, listen without judgment, acknowledge their feelings, and give them space to share when they’re ready.
- **Keep their stage of development in mind.** Their brain is still developing—risk-taking and reward-seeking are natural at this stage.

A healthy reward and motivation system helps us enjoy things that are good for us, avoid things that are bad for us, and learn from our experiences.

