

# Executive Function

## A Quick Guide

### What is Executive Function?

Executive function is an umbrella term for a group of functions that work together to create purposeful, goal-directed, problem-solving behaviour (Gioia, Isquith, Guy, & Kenworthy, 2000).

### Skills related to Executive Function

Executive function covers skills such as:

- **Capacity to inhibit:** the ability to resist doing something, not act on impulse, or stop a behaviour
- **Shift:** the ability to move freely from one situation, activity, or problem to another
- **Emotional control:** the ability to adapt and/or adjust emotional responses
- **Capacity to initiate:** the ability to start an activity, including generating ideas and problem solving
- **Working memory:** the ability to hold information in mind and manipulate it in some way (for example, as in mental arithmetic)
- **Capacity to plan/organise:** the ability to anticipate an outcome, set goals, and plan steps to carry out a task
- **Organisation of materials:** the ability to organise work, play and storage spaces (e.g. desk, schoolbag, bedroom)
- **Capacity to monitor:** the ability to check work, or check/monitor the effect of our own behaviour.

### Difficulties with Executive Function

Children and young people who have difficulties with executive function may:

- Be impulsive or have difficulty with attention/focusing on a task
- Require support and prompting to check their work
- Have difficulty in new situations
- Need help to organise themselves e.g. to produce the right equipment for a lesson, to remember their P.E. kit, to do homework
- Have difficulty moving from one activity from another or struggle to cope with changes to their routine
- Have difficulty in retaining new information
- Have difficulty in starting/planning how to start a task
- Show strong emotional responses.

### Vulnerable Groups

Children and young people who *may* be particularly vulnerable to executive function difficulties include:

- Individuals who have experienced developmental trauma
- Individuals who have a traumatic brain injury
- Individuals with a diagnosis of Attention Deficit Hyperactivity Disorder, Tourette's Syndrome, Obsessive Compulsive Disorder, Foetal Alcohol Spectrum Disorder or Autism Spectrum Condition.



## How can we help?

The section below provides some suggestions for supporting executive function difficulties within a learning context.

### Capacity to Inhibit

- Use discreet gestures, words or visual cues you have previously agreed upon to let the child or young person (CYP) know they are interrupting
- Practise inhibitory control using games, e.g. Simon Says
- Praise the CYP in a low-key way for interruption-free times, and acknowledge how difficult this must have been for them
- If the CYP has their hand up to give an answer, acknowledge that you have noticed them, even if you cannot choose them to answer each time
- Try to limit environmental distractions, e.g. consider seating position, wall displays, equipment in reach etc.
- Provide opportunities for activity/sensory breaks
- Provide suitable fiddling toys or allow the CYP to 'doodle'
- Use role-play to practise scenarios that the CYP finds challenging
- Take time to reflect with the CYP about things they find easy/difficult, and develop strategies and goals together.

### A note on being a teenager

Teenagers find some elements of executive function particularly difficult when compared to adults. For example, research suggests they are more impulsive, more likely to take risks, and more likely to make choices that lead to high rewards, even when these choices have negative consequences (Blakemore, 2018).

### Shift

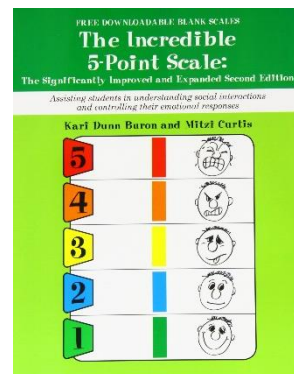
- Use a visual/written timetable or now/next board
- Plan and structure transition times, e.g. marking them with a song, giving time warnings, allowing the CYP to transition before/after others
- Promote an understanding of time, e.g. teaching how to tell the time, using a timer
- Warn the CYP of an upcoming change in activity and tell them what will happen next
- Gradually expose the CYP to change, e.g. use a 'surprise' symbol on a visual timetable
- Work together to consider strategies that help the CYP to manage change, and model how you adapt to change
- Create consistent routines for beginnings and endings, and actively involve the CYP with the beginnings and endings of activities, e.g. tidying up and helping get the equipment needed for the next activity, repetitive routines for entering/exiting school
- Build in time to reflect on learning outcomes/what has been achieved at the end of lessons, days, weeks, half terms, and academic years
- Use visual and interactive methods to help a CYP to 'move on', e.g. using worry monsters for CYP to write down and 'post' their worries, to be discussed at a later date
- Use social stories to prepare a CYP when they are predictably inflexible.

### Emotional Control

- Support through empathy, attunement and emotional containment, e.g. wondering aloud:
  - *I'm wondering if you are feeling...because...let's...*
  - *I'm not going to be in the classroom today and I know you often find that difficult. How can I help you to cope today?*
- Model self-regulation, e.g. share your own experiences

## Emotional Control (continued)

- Develop an awareness of the CYP's triggers so these can be minimised or supported where possible (e.g. unstructured times)
- Work with the CYP to identify times of the day/week or activities they find difficult
- Teach emotional awareness and vocabulary
- Teach strategies that help calm, soothe and cope, e.g. develop the use of a calm box, provide a 'safe space'
- Use therapeutic stories/stories with therapeutic potential e.g. ['The Huge Bag of Worries'](#) (Ironsides, 2012), Margot Sunderland's therapeutic stories
- Introduce principles from Cognitive Behavioural Therapy, e.g. ['Think Good Feel Good'](#), [Kate Collins-Donnelly books](#)
- Create visual aids, e.g. five-point scale/['Zones of Regulation'](#) (Kuypers, 2011), time out card
- Role-play scenarios that might be tricky for the CYP
- Use distraction techniques to avoid situations escalating
- 'Drip feed' low key praise for signs of self-regulation, and be explicit about the behaviour you are praising.



### Capacity to Initiate

- Give an overview of the task and an example of the expected end product
- Break tasks into chunks and assign time frames for completing each chunk
- Teach routines for starting tasks, and make checklists/visual prompts for starting tasks
- Provide single step instructions
- Start tasks with questions the CYP would perceive as 'easy', before gradually building up to trickier questions
- Consider using writing frames, sentence starters, or helping the CYP by completing the initial stage of the task with them.
- Support idea-generation through strategies, e.g. mind-mapping.

### Working Memory

- The seven main principles of supporting working memory are:
  1. Recognise working memory failures
  2. Monitor the CYP for signs of working memory overload
  3. Evaluate the working memory load of tasks
  4. Reduce working memory load when necessary
  5. Repeat important information
  6. Encourage use of memory aids
  7. Develop the CYP's own strategies to support working memory
- Refer to ["Understanding Working Memory: A Classroom Guide"](#) (Gathercole & Alloway, 2007) for further ideas and information
- Consider introducing Precision Teaching for teaching specific skills (contact the Educational Psychology Service for further information).

### Capacity to Plan/Organise

- Encourage the CYP to verbalise what they are doing and what they need to do next e.g. 'first I am..., then I will...'
- Teach techniques to help the CYP to consolidate main ideas and to organise and understand other key points, e.g. mind-mapping
- Use templates or worksheets with spaces/boxes for each element of a task
- Encourage a 'goal, plan, do, review' structure to a task.

## Organisation of Materials

- Help the CYP to organise their work space/consider having an individual work station
- Minimise clutter, e.g. on tables, in drawers, reading folders, bags and pockets
- Help the CYP to organise their belongings on a daily basis, and ensure all equipment is labelled with the CYP's name
- Assign work trays/folders that are clearly marked and kept in the same place, e.g. a green folder for ongoing work, a red folder for finished work
- Help the CYP learn to make and use checklists, crossing items off as they are accomplished or resources off as they collect them
- Show CYP how to use a school planner/diary
- Colour-code school timetables
- Introduce visualisation techniques, e.g. imagining where they will be when the bell rings and what they need to do when they hear it.

## Capacity to Monitor

- Help CYP check their work by providing checking prompt lists, e.g. spelling, capital letters, full stops, etc.
- Help CYP develop personalised checklists, so they become more aware of, and check for, their own most common errors
- Help the CYP to monitor their emotions/behaviour by using scales (e.g. a five point scale) or keeping a diary.



Executive function is often described as the 'air traffic control' centre of the brain.

## More generally...

A CYP's capacity to use skills associated with executive function are better when the CYP is well rested, happier, has lower stress levels, and when they feel cared about and supported (Diamond & Ling, 2016).

## Further reading

- There is a wealth of information about executive function on the [Harvard University site](#). In particular, there is a [section](#) on the site that provides information about enhancing executive function skills in children and young people from six months to adolescents
- This [video](#) provides a snapshot guide to executive function in children
- Two useful books about brain development in adolescents include:
  - o ['Blame My Brain'](#) (Nicola Morgan, 2013)
  - o ['Inventing Ourselves: The Secret Life of the Teenage Brain'](#) (Sarah-Jayne Blakemore, 2018).