Dealing with the challenges of ADHD in school students

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This webinar will cover

ADHD:

- Model for conceptualising attentional difficulties in ADHD
- Recognising the strategies that people use to cope with the attention deficits

ODD:

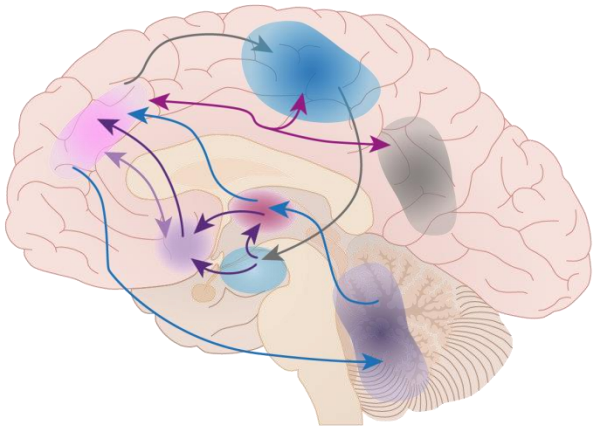
- Rules of ODD and how to use them
- Maintaining the self-esteem

Brain differences in ADHD

- Interacting neural circuits
- Several different neurotransmitters
- Different receptors with varying affinities for each of the neurotransmitters

Multiple different sites for divergence from ‘neurotypical’

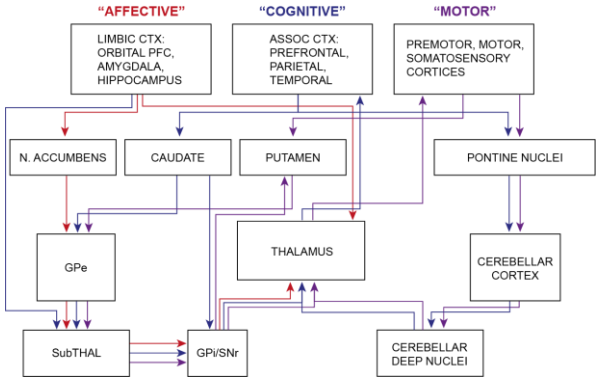
Insight from Neuroscience/Neuroimaging /Neurotransmission



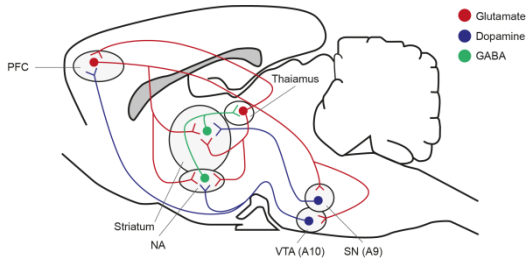
Frontal Cortex
Parietal Cortex
Supplementary Motor Cortex
Accumbens Nucleus
Thalamus
Basal Ganglia
Cerebellum

Fronto-cerebellar network
Reward network
Fronto-striatal network
Executive function network
Attentional network

Reproduced from ADHD Institute
An educational platform developed and funded by Shire
Source: Purper-Ouakil 2011



Source: Middleton and Strick 2002



Source: Miller 2013

Purper-Ouakil D, Ramoz N, Lepagnol-Bestel A-M, et al. Neurobiology of attention deficit/hyperactivity disorder: nature publishing group, 2011.
Middleton FA, Strick PL. Basal-ganglia 'projections' to the prefrontal cortex of the primate. Cereb. Cortex 2002;**12**(9):926-35
Miller EM, Thomas TC, Gerhardt GA, et al. Dopamine and glutamate interactions in ADHD: implications for the future neuropharmacology of ADHD. In: Banerjee S, ed. Attention deficit hyperactivity disorder in children and adolescents. Rijeka: intech, 2013:ch. 06.

Executive functioning – the functions of the 'thinking' brain

- Reasoning – thinking logically
- Making good decisions
- Short term memory
- Attention span
- Listening and following instructions
- Controlling impulsive behaviour

These functions are important for achievement

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Brown TE. ADD/ADHD and Impaired Executive Function in Clinical Practice. Current Psychiatry Reports 2008;10:407-411.

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The overall effect

- **neurological and neurochemical differences**
- **executive functioning deficits**

= a brain that functions less efficiently

This results in 1 or more of the following:

- Problems with achieving your career potential
- Problems functioning in the family
- Problems functioning at work
- Problems with relationships
- Low self-esteem

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What does it mean for Spike to have a brain that doesn't work efficiently?

Working is like running uphill

It is not that the task is too difficult but Spike will get tired sooner and will slow down or stop to rest. Meanwhile, others who are running on the level finish the task.

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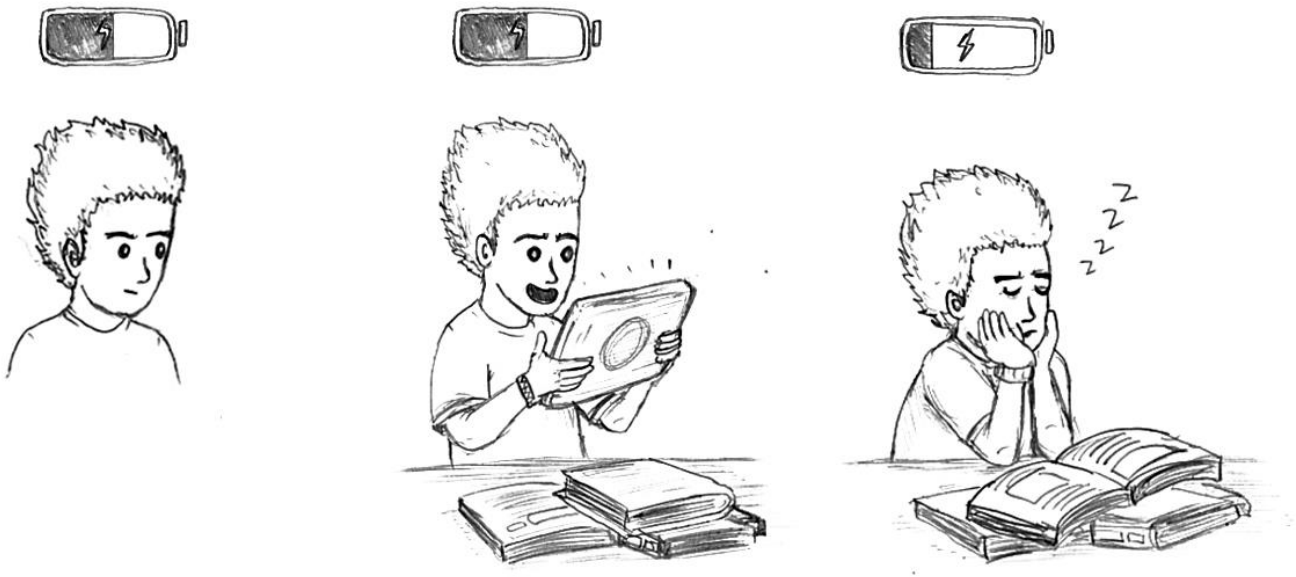
In ADHD the brain does not function efficiently

The brain is like a computer that's running out of charge



It can keep running low-level programs but as soon as it starts to run a high-level program, fairly quickly it flicks onto stand-by

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If Spike is going to persist at a task, it must be:

- Short
- Or easy
- Or very interesting or rewarding

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What might happen if the brain's 'battery power' is critically low?

1. It may keep flicking on and off	➢ Brief lapses in attention
2. It may keep running but not at full capacity	➢ Partly concentrating but not taking everything in ➢ Not giving adequate thought to a decision
3. It may work more and more slowly	➢ Increasing effort to keep working on a task
4. It may stop working	➢ Daydreaming

What might we see in ADHD?

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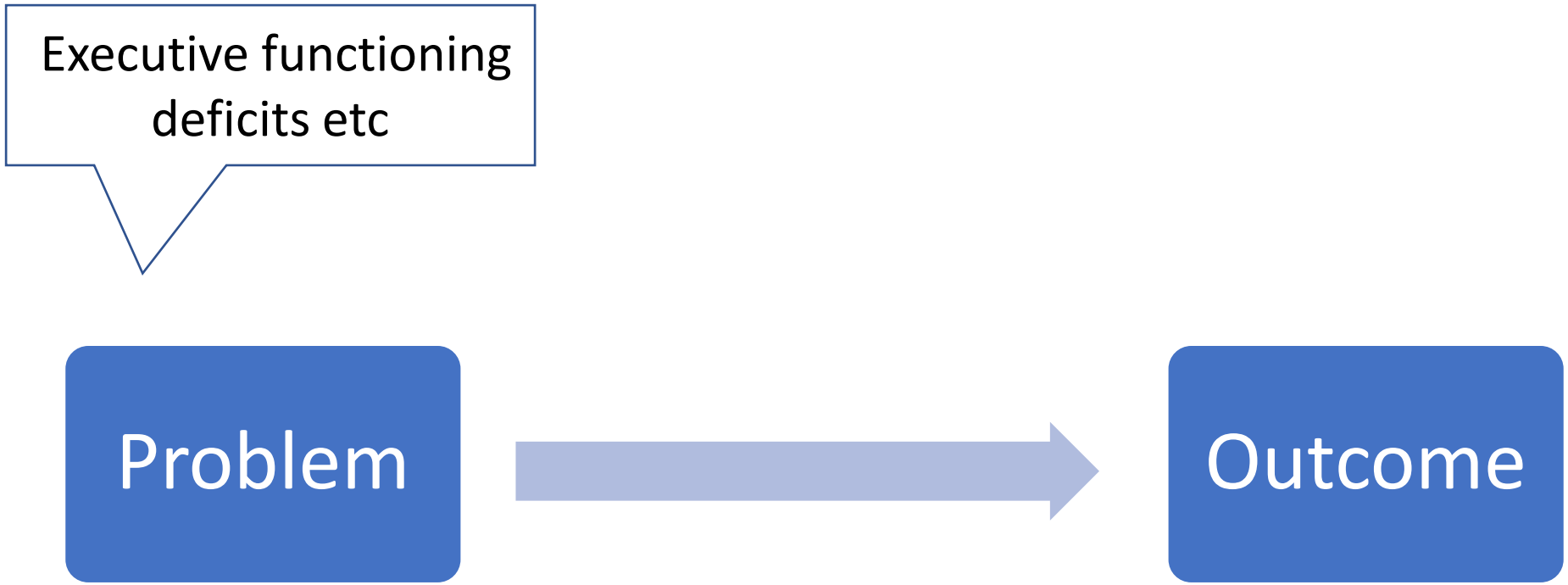

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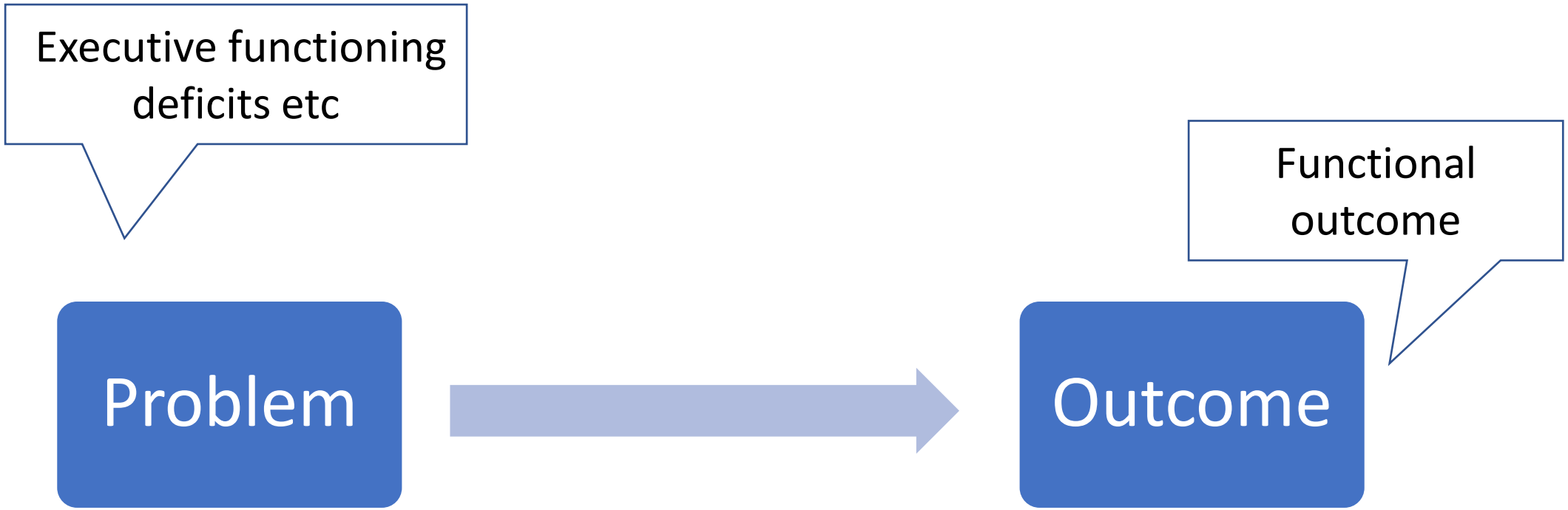

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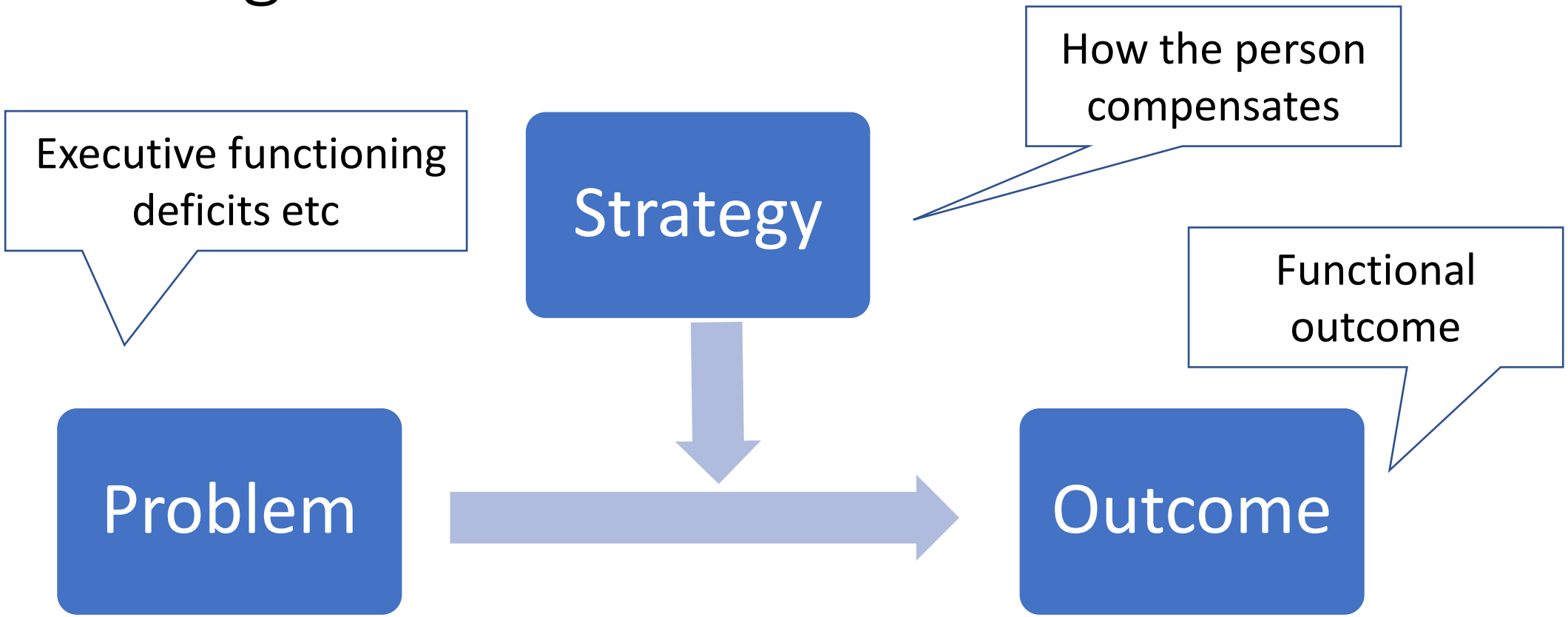

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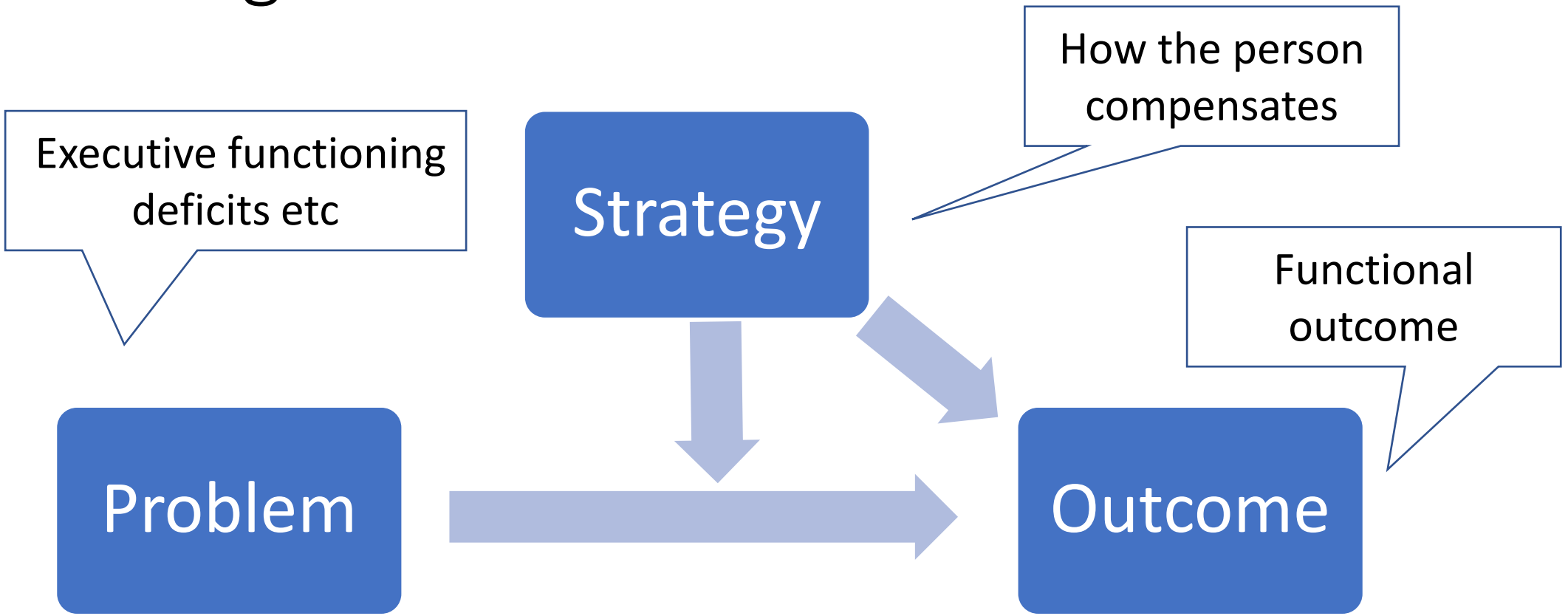
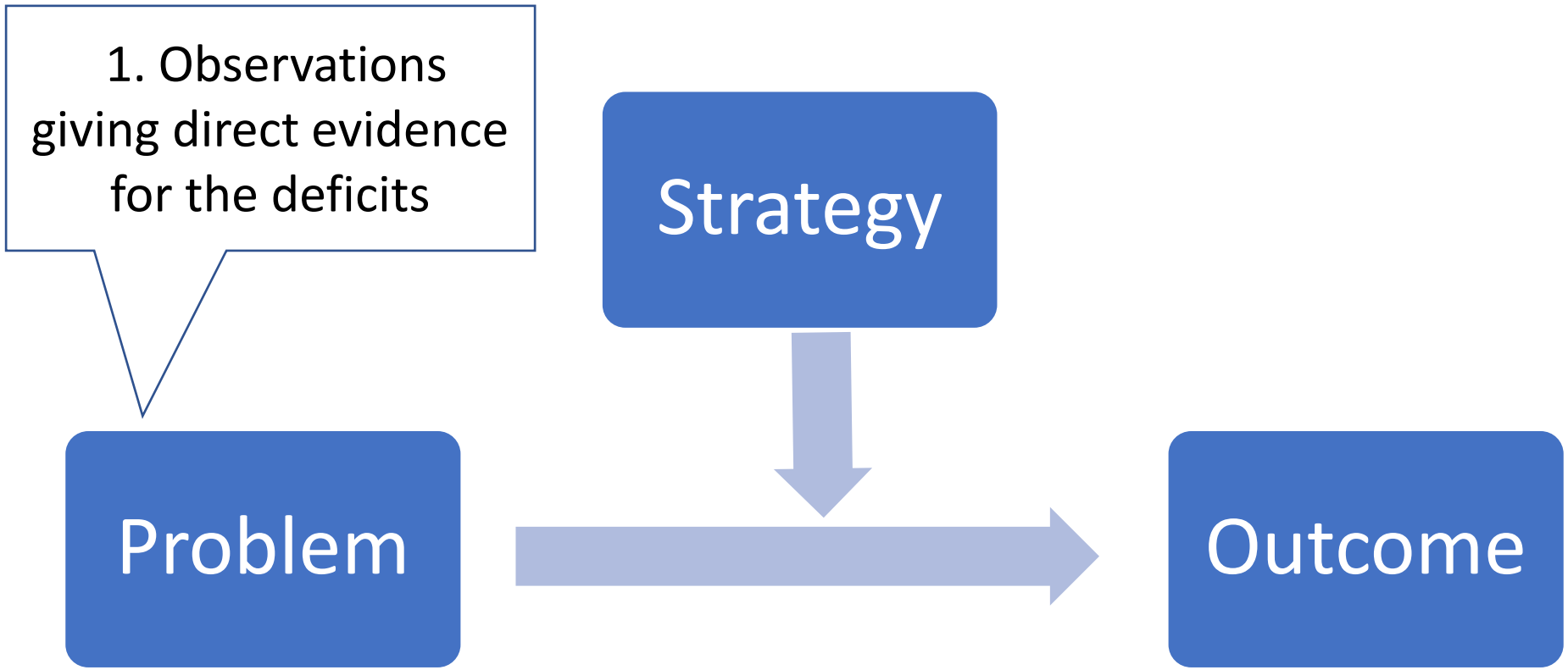


Detecting the underlying deficits



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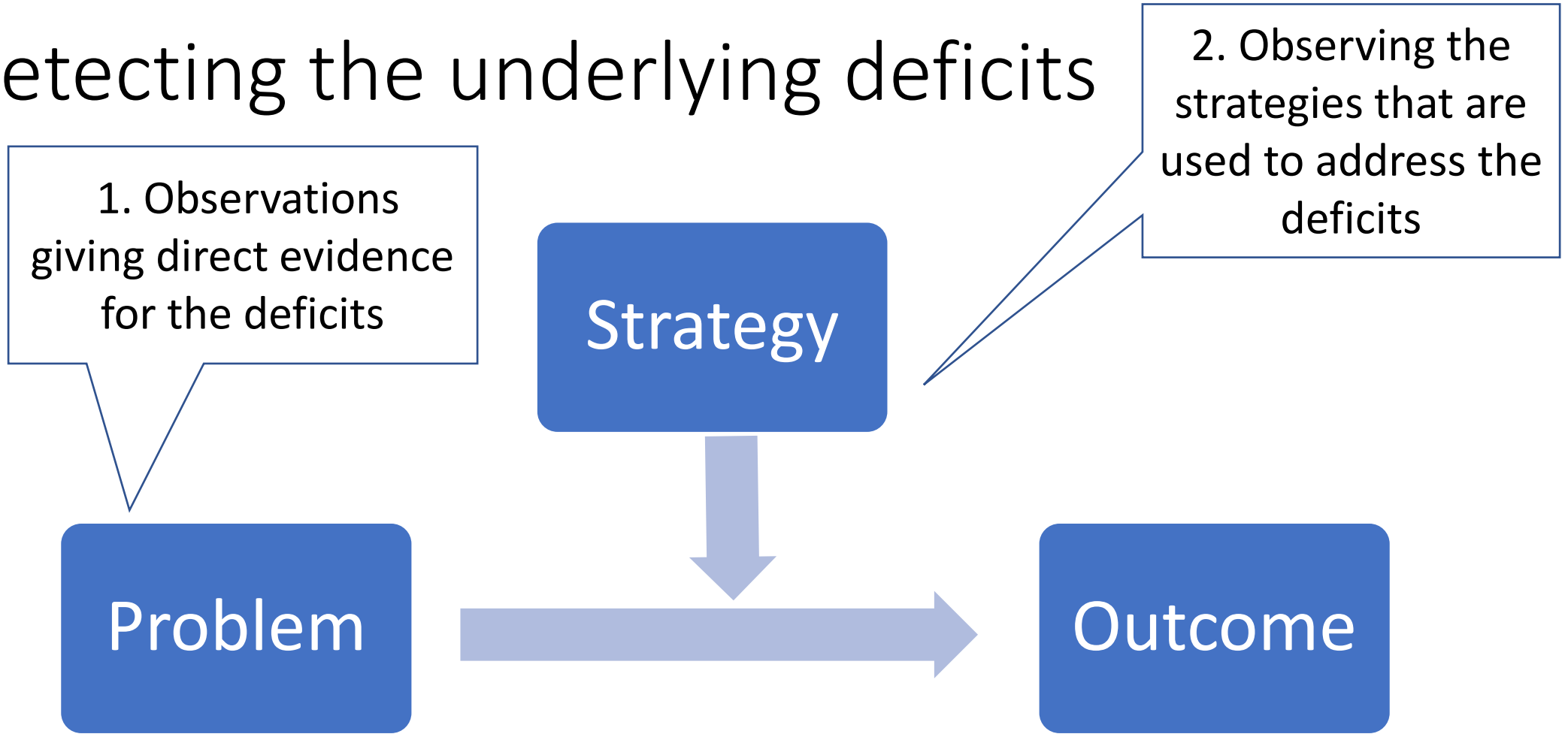

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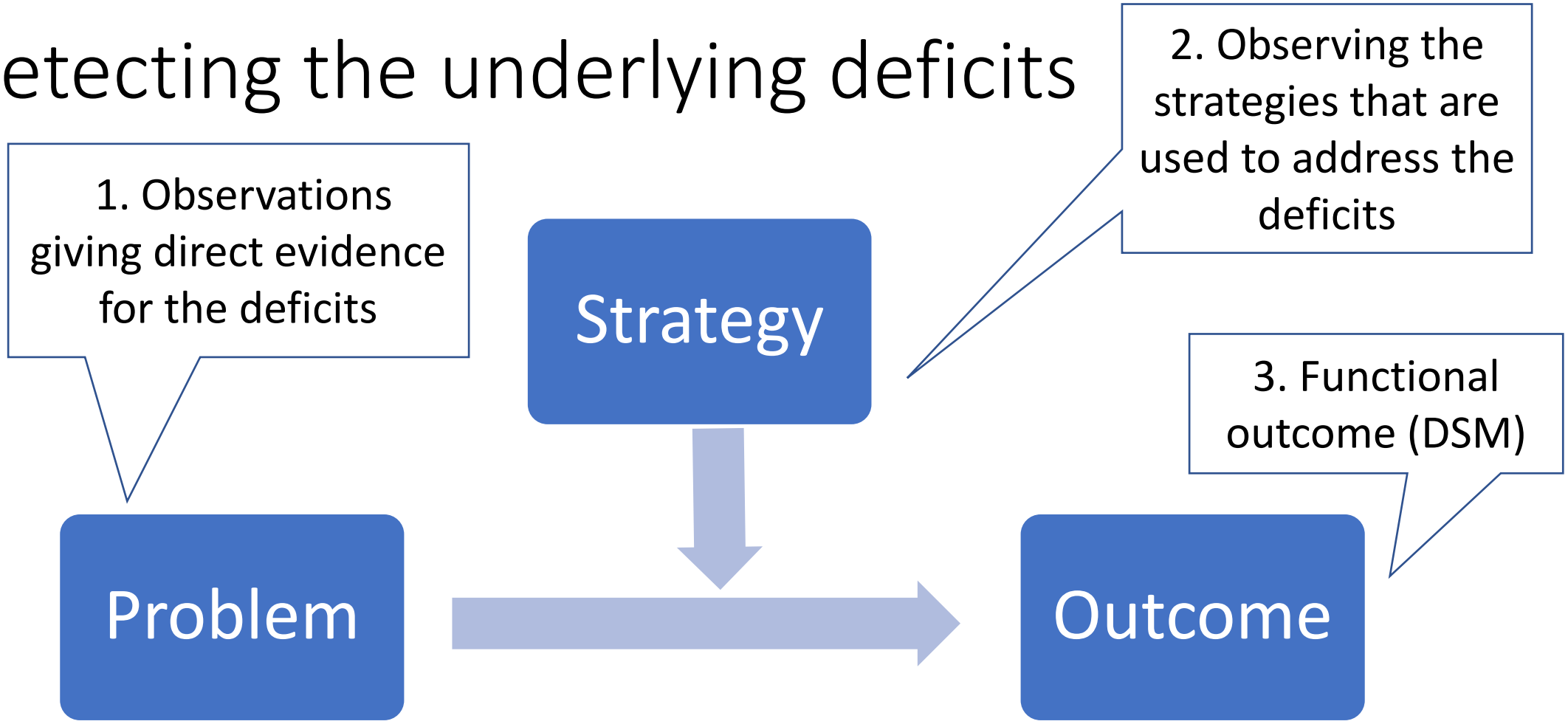

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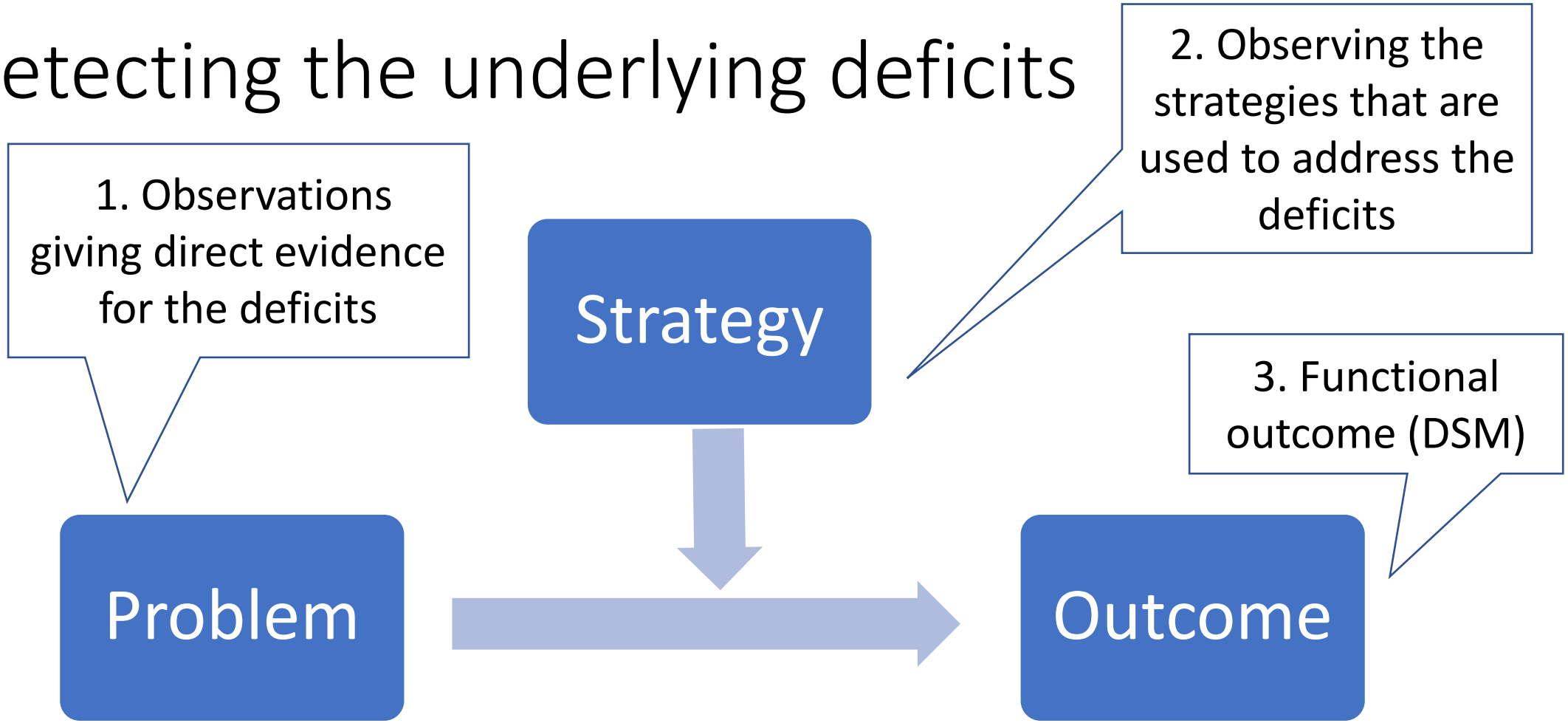


DSM is insensitive as is mainly based on the observable outcomes of the deficits

1. Brief lapses in attention

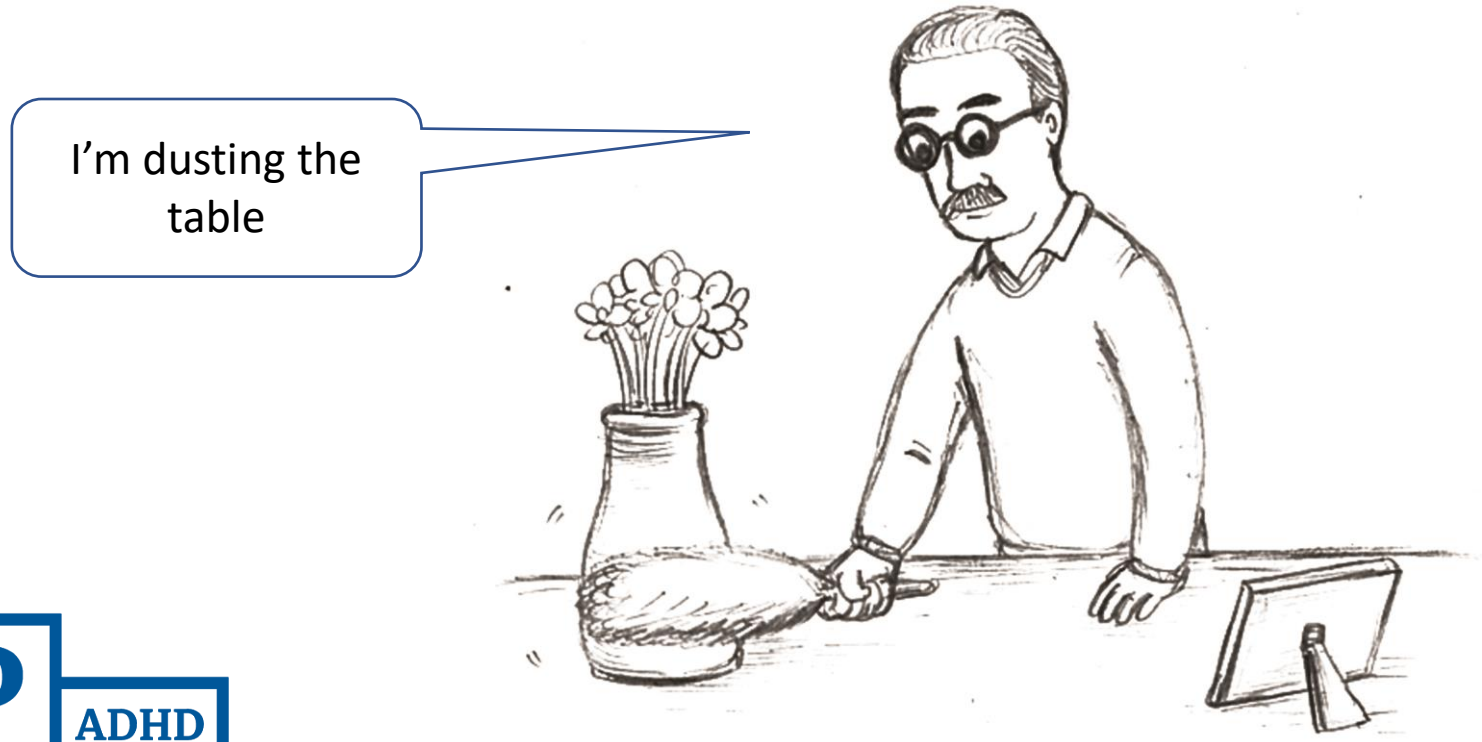
The battery that keeps flicking on and off

- This is like having those ‘seniors moments’

- May be happening ‘all the time’ in ADHD
- The person keeps forgetting what they were doing or thinking
- Difficulty retrieving their line of thought
- Tasks require an extraordinary level of determination
- Tasks are not finished

Typical strategy: recruiting auditory memory to reinforce retention of thought processes

Recruiting auditory memory to keep track of thoughts



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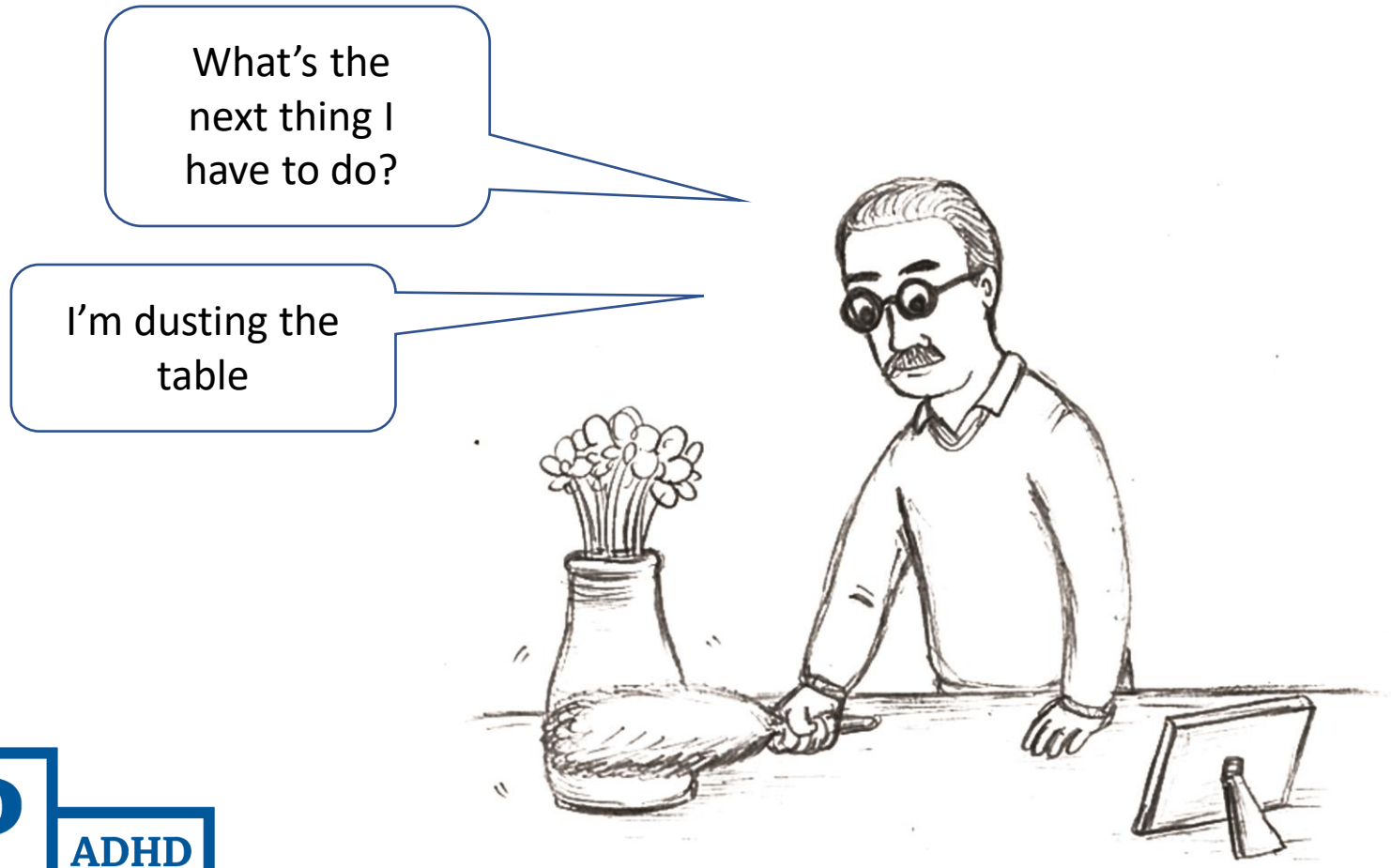

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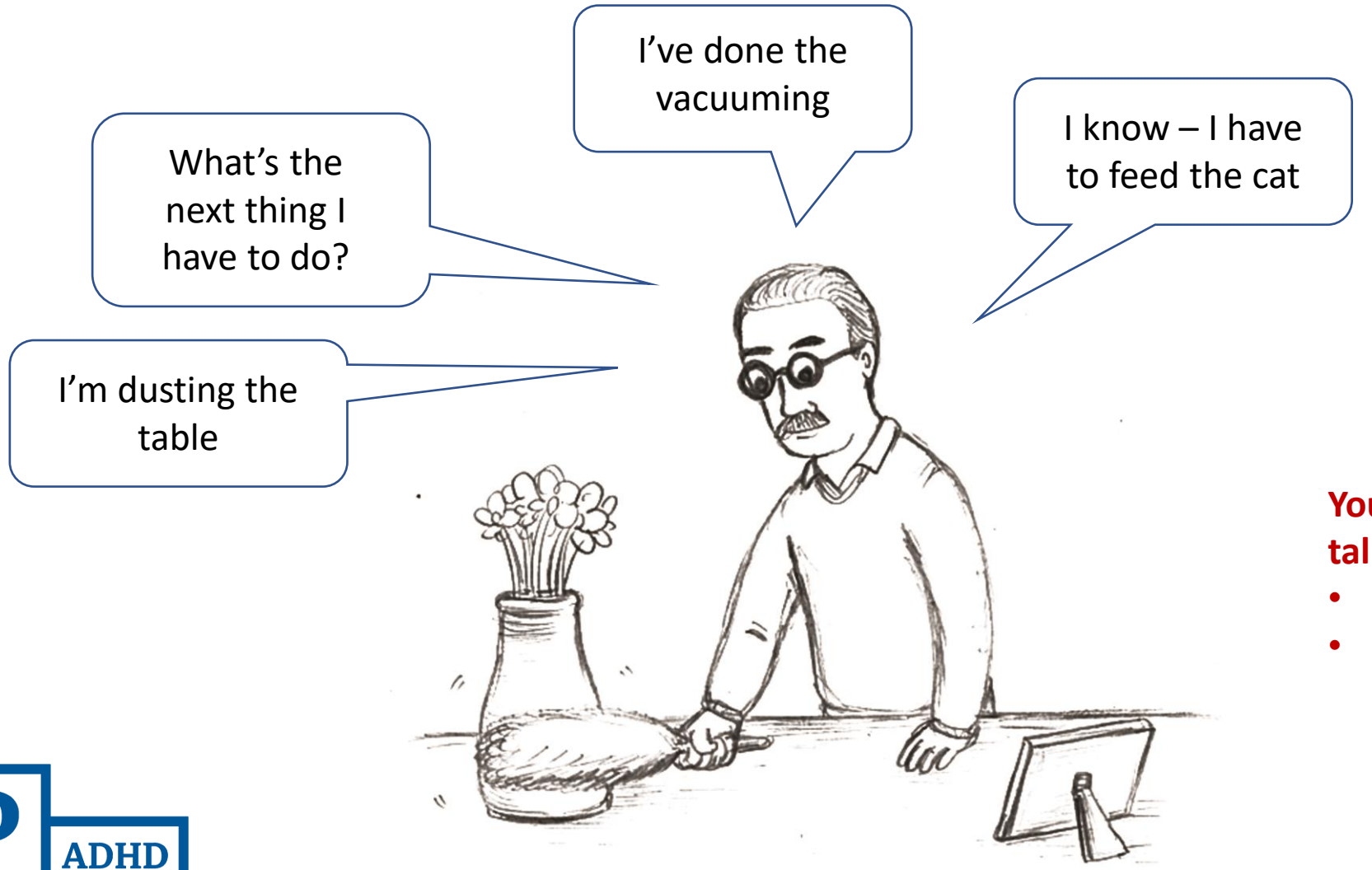


Your student keeps on talking to himself/herself

- **Repeating instructions**
- **Saying thoughts out loud**

2. Partly concentrating

The battery is running but not at full capacity

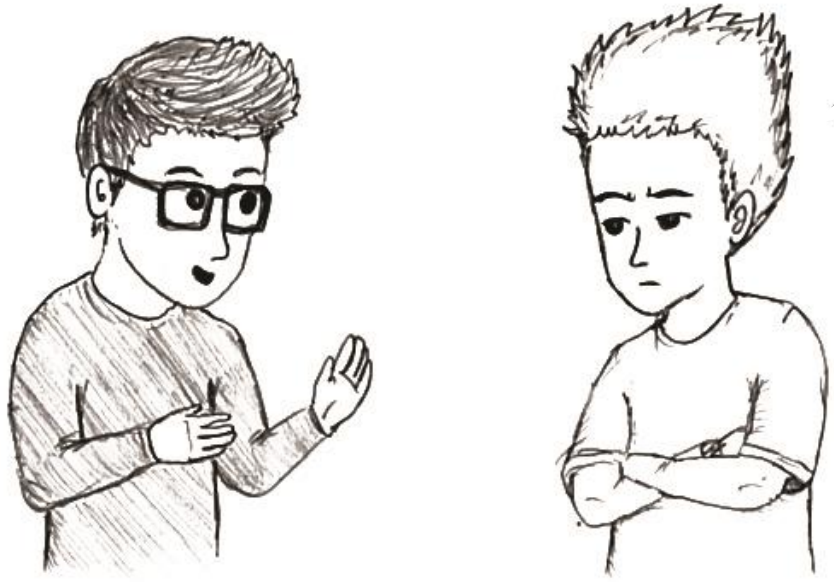
- This is like running on ‘power save’ mode
  - Partly concentrating but not taking everything in – may resemble a receptive language deficit
  - Unable to use reason effectively

Typical strategy – taking **‘mental short cuts’:** these conserve mental energy so the mind can keep running for longer

1. Listening to only part of the sentence and guessing the rest
2. Making decisions based on emotion rather than reason

Mental ‘shortcut’- Pretending to listen but not really concentrating

As people mature they expect more intense attention from their friends



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Mental ‘shortcut’- Pretending to listen but not really concentrating

As people mature they expect more intense attention from their friends

To be a stimulating companion he must

- Listen
- Think of a suitable response
- Put that response into sentences

This is requires effort

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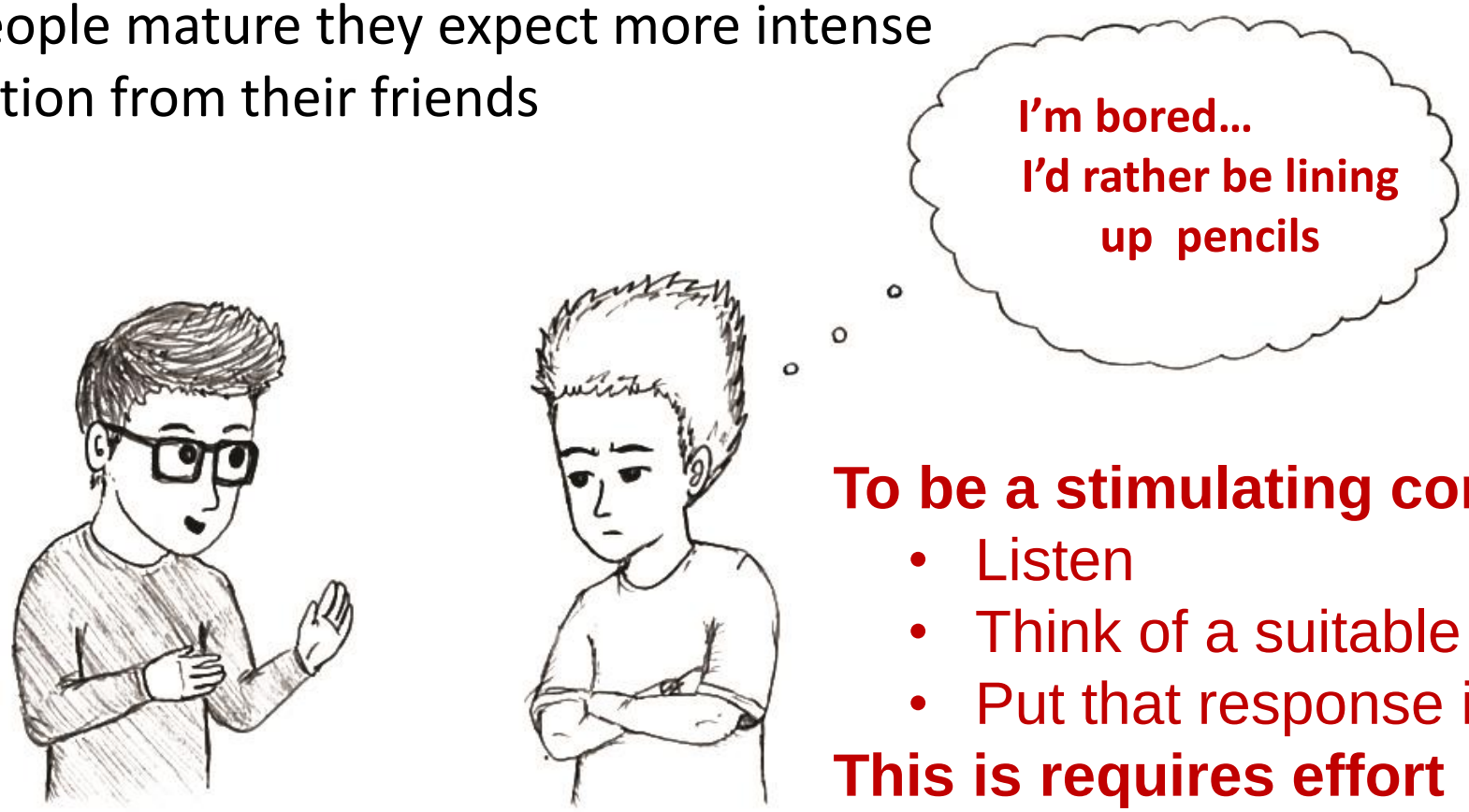

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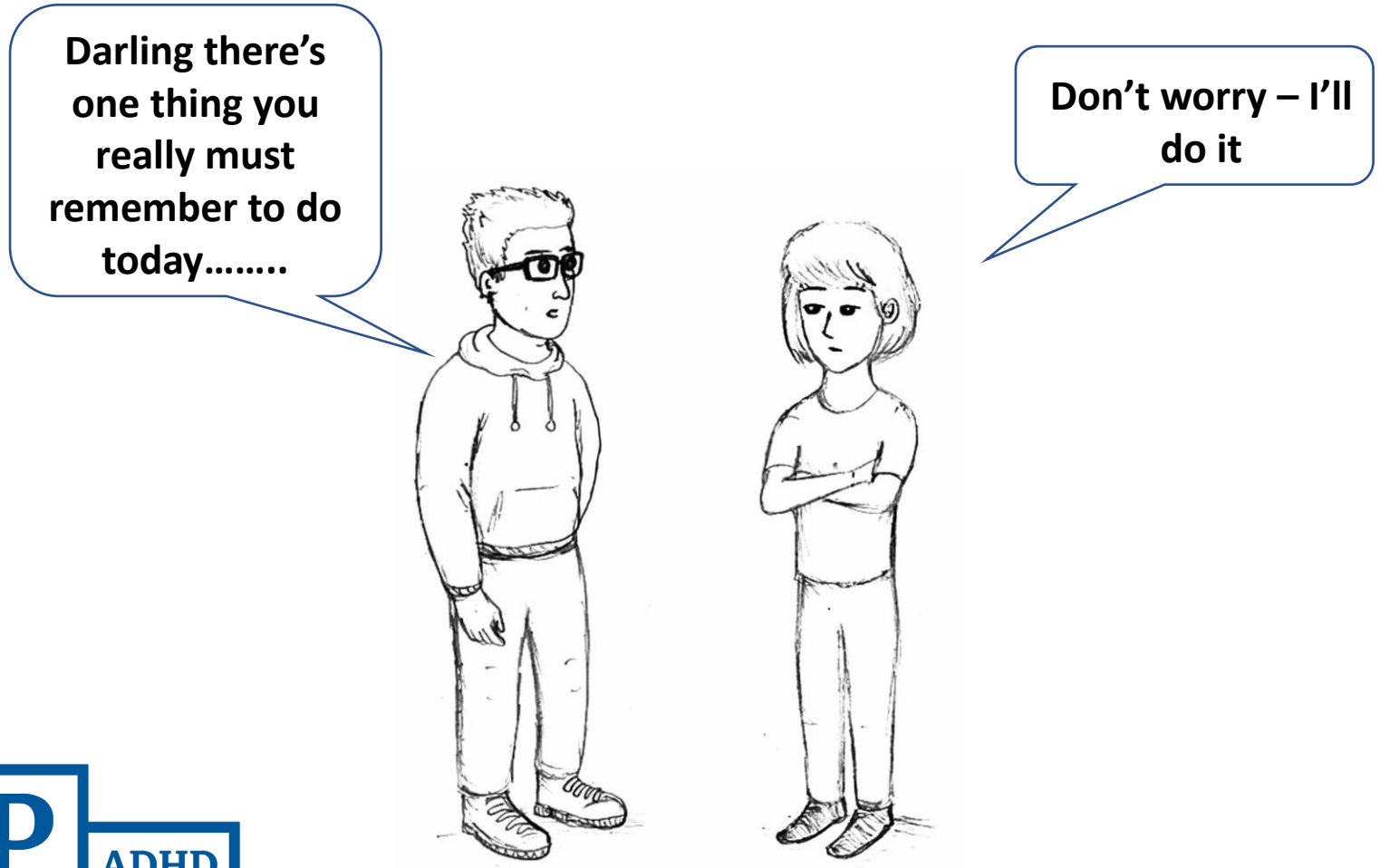
Mental shortcut – Listening to only part of the sentence and guessing the rest



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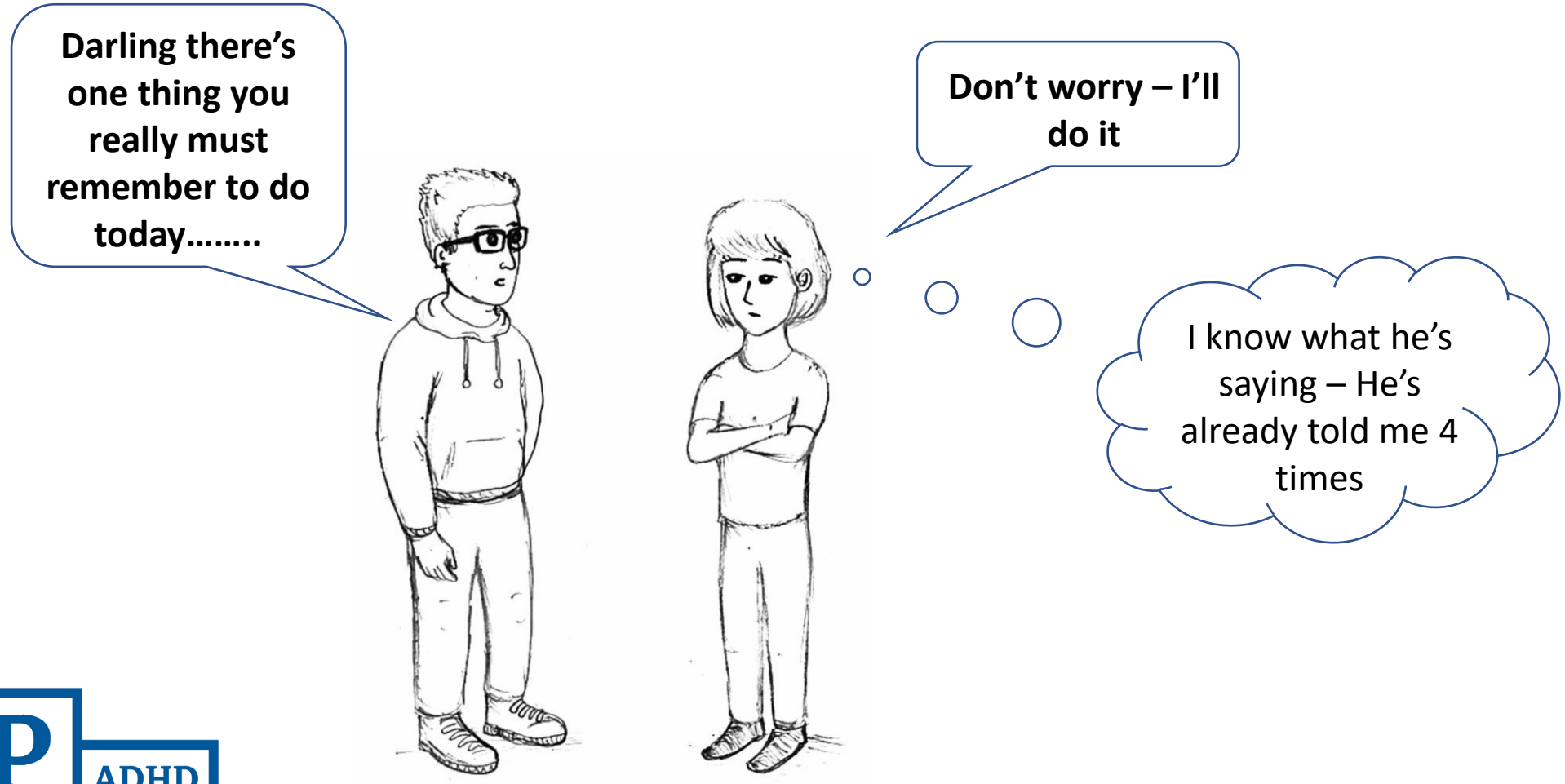

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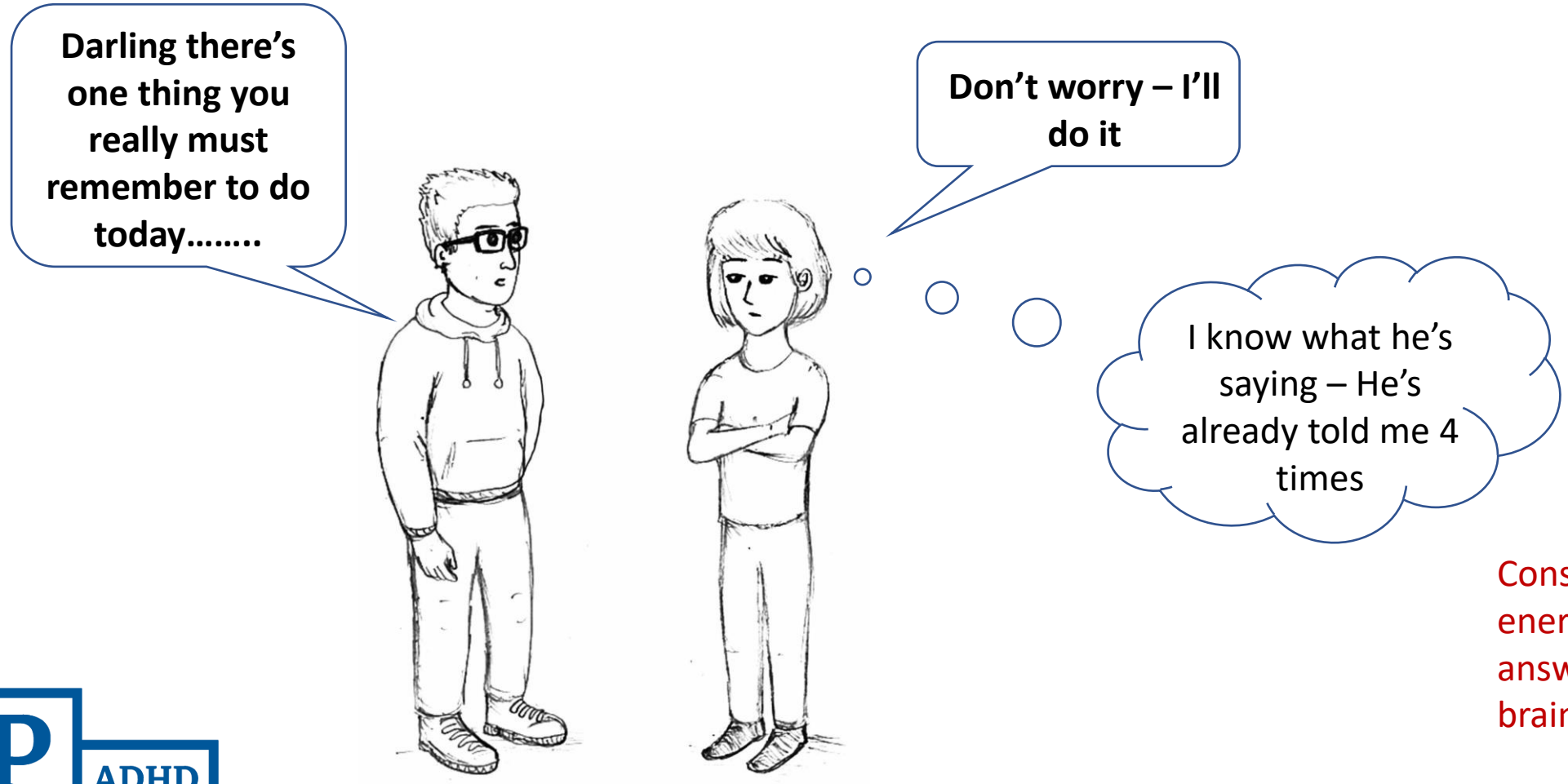
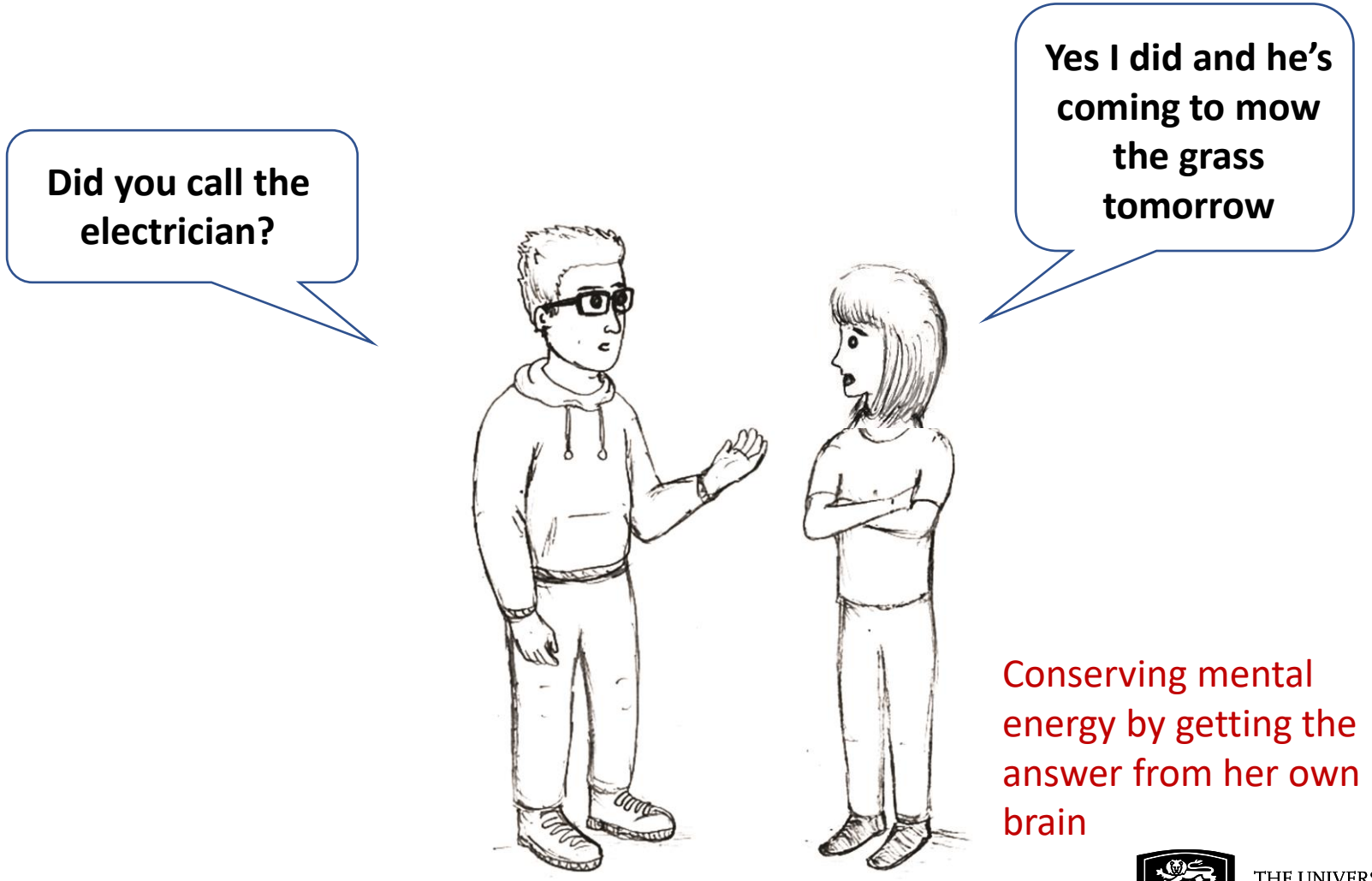


Conserving mental energy by getting the answer from her own brain

Mental shortcut – Listening to only part of the sentence and guessing the rest



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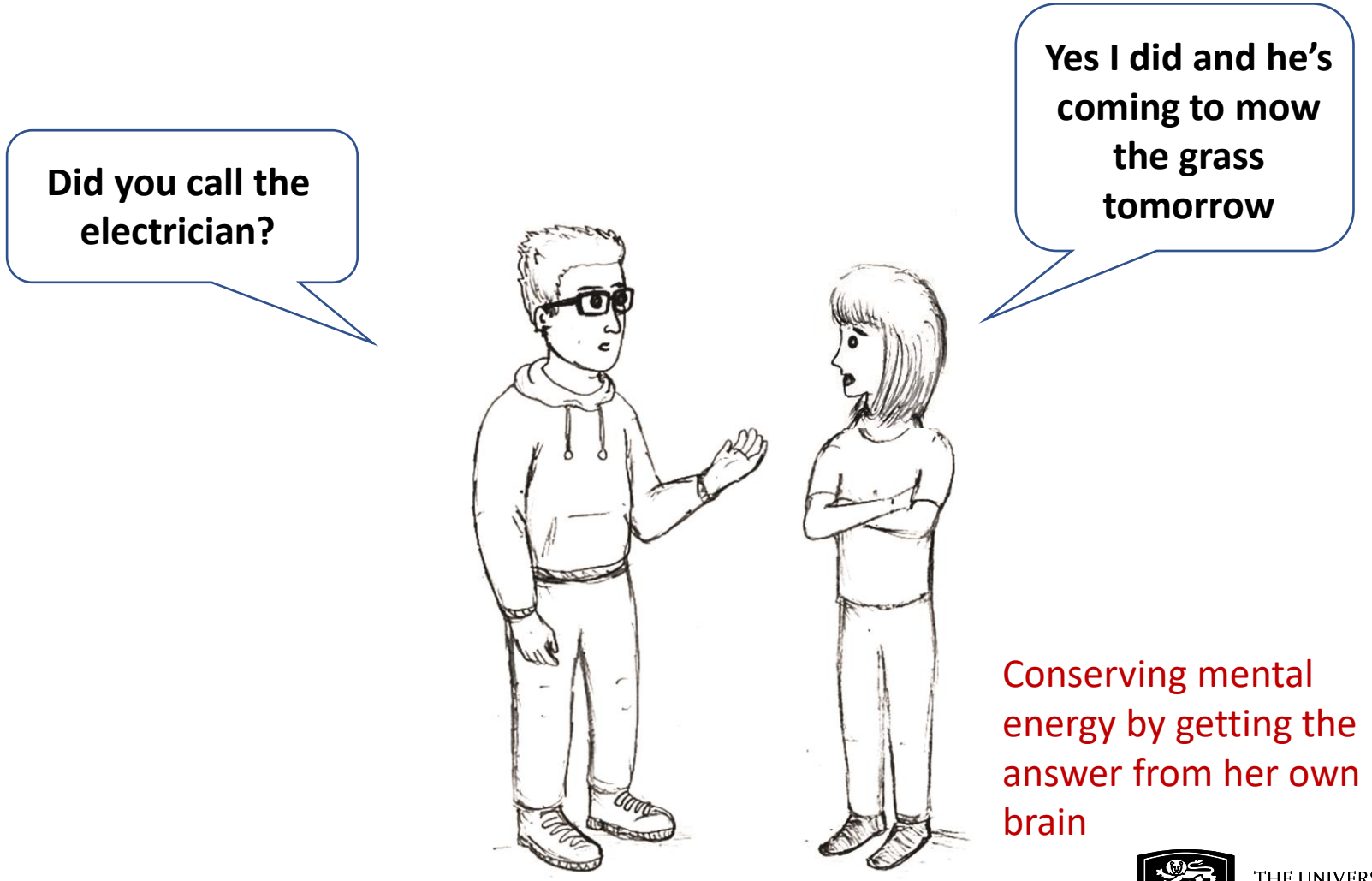

Your student is convinced you said something different

From the student's perspective he/she is telling the truth

Conserving mental energy by getting the answer from her own brain

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Mental shortcut – Listening to only part of the sentence and guessing the rest

- Teacher is frustrated because the student just doesn't listen
- She/he keeps making the same mistakes
- If the student tries harder she/he gets stressed and fatigued more quickly

Low self-esteem

Anxiety and depression

Vital to understand that this is a strategy that helps the student to keep working for longer

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Mental shortcut – Not giving adequate thought to a decision

Decisions can be based on reason

- Requires mental effort

Decisions can be based on emotion

- Quick and easy

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This pair will serve the purpose. Although they don't look as smart they are sturdy and much cheaper. This will help me to save up for driving lessons

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I must have these shoes! They make me feel so good!

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If the emotion is negative the result can be devastating

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Mental shortcut – Not giving adequate thought to a decision

Outcomes of decisions based on emotion rather than reason

- Living with the consequences of poor choices
- If the emotion is negative
  - Social consequences of anger/aggression/spite

Social Rejection

Low self-esteem/Depression

3. Increasing effort to keep working on a task

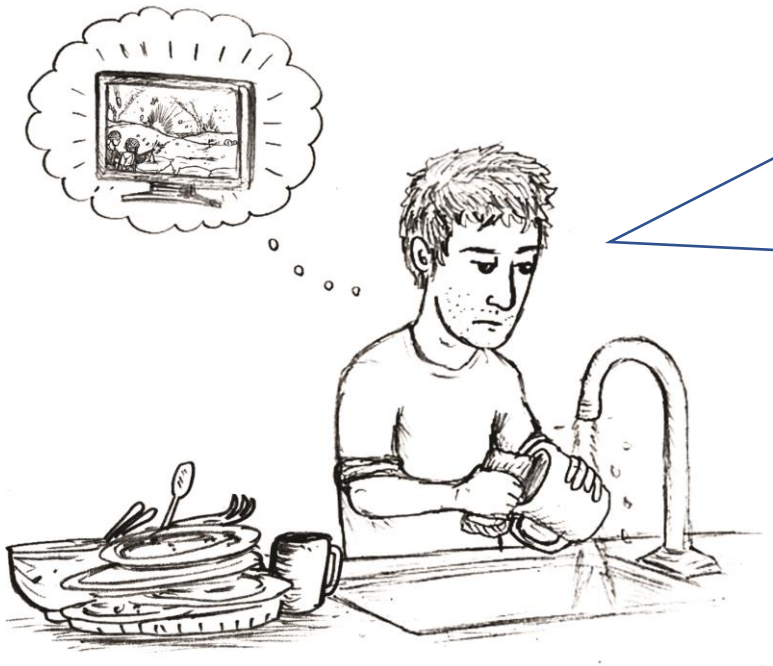
The battery is running out and the brain is slowing down

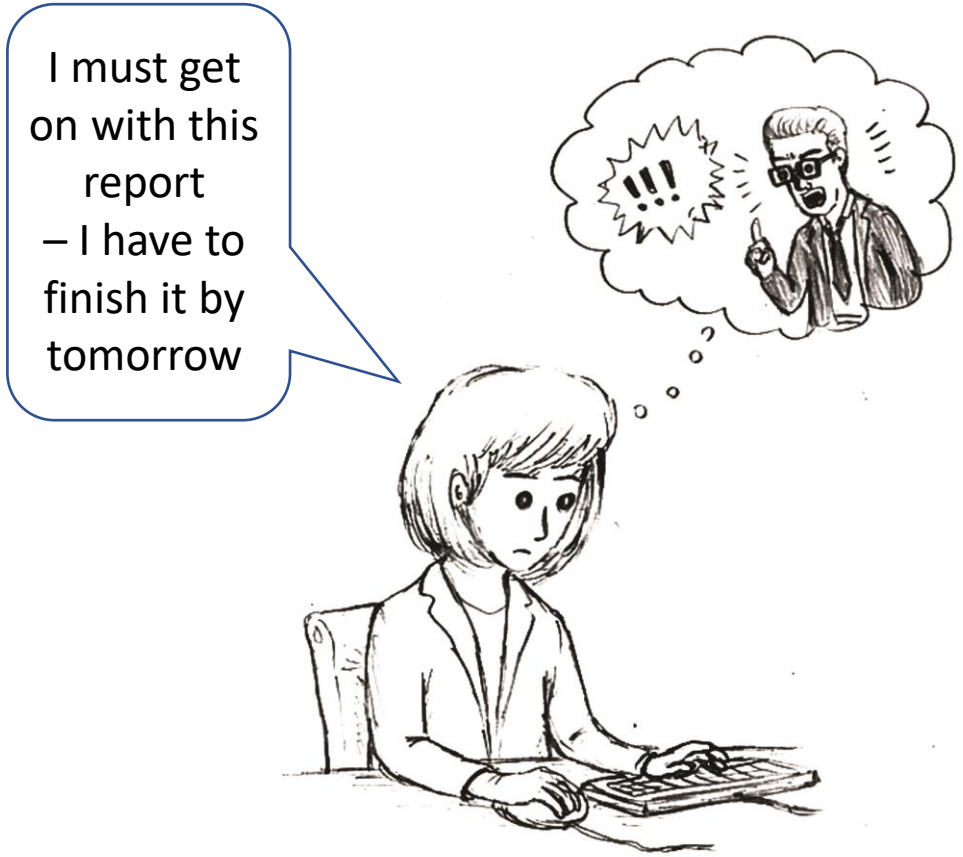
- The effort increases as the brain runs more and more slowly
  - Procrastination – putting off difficult tasks
  - Mental fatigue
- Stimulation/interest can have a ‘recharging’ effect

Typical strategies

1. Increasing the rewards/negative consequences: ‘carrot and stick’ approach – eg missing out on recess if work is not finished
2. Increasing the stimulation – eg working with a partner who helps to keep the student focused

Increasing the rewards/negative consequences: ‘carrot and stick’ approach





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3. Increasing effort to keep working on a task

The battery is running out and the brain is slowing down

Effects

- Working slowly and stopping for breaks
- Intolerant of interruptions because of the difficulty of re-starting
- Inefficiency – missing deadlines, leaving tasks unfinished

Outcomes

- Academic underachievement
- Neglect of activities of daily living

Anxiety and depression

Increasing the stimulation

People with ADHD often actively seek stimulation and may be very intolerant of boredom

Stimulation can keep the mind working

Multi-tasking

Listening to music or listening to the radio while working

Exercise – being able to think better while pacing around – hyperactive

Your student/patient/colleague may genuinely work better with a constant distraction

4. Daydreaming

- The brain stops working
- The person may lose track of time

Problem	Compensatory strategy	Outcome – DSM criteria
Brief lapses in attention	Saying things quickly before they are forgotten Speaking thoughts out loud	Interrupting Being impulsive Being disruptive
Partial concentration	Mental ‘short cuts’	Not listening adequately Careless mistakes Forgetting things Losing things
Working more and more slowly as the effort increases	Focusing on the easier aspects – eg neatness and illustrations Moving to an easier activity	Difficulty sustaining attention Not completing tasks Task avoidance Being distracted
Daydreaming		Not working or listening at all Losing track of time

Detecting the deficits associated with ADHD

Underlying deficits in attention

- Observations giving direct evidence for the deficits

Strategies used in ADHD

- Strategies that keep the mind functioning longer
- Strategies that assist with memory and task completion

Functional outcomes

- Functional outcomes resulting from the deficits
- Functional outcomes resulting from the strategies – important to recognise

Procrastination

- the person knows that they do not have sufficient mental energy
- the task will be impossible without a super-human effort

Detecting the deficits in attention

- Ask about what is happening to the mind/attention when carrying out tasks
- Ask for estimates of the % of time spent on-task and off-task
- Find out about the attention span – how long the person can concentrate before they have to stop
- What is the mind doing when off-task?

People with ADHD develop strategies which they find by experience help them to function better

Oppositional defiant disorder (ODD)

- Frequently occurs in children with ADHD
- Usually more disabling than ADHD
- Difficult for parents and teachers to manage

- Strongly inherited – parents are often similar to their children

Oppositional Defiant Disorder (ODD)

1. Often loses temper
2. Is often touchy or easily annoyed
3. Is often angry or resentful
4. Often argues with authority figures
5. Often actively defies or refuses to comply with requests or rules
6. Often deliberately annoys people
7. Often blames others for his or her mistakes or misbehaviour
8. Has been spiteful or vindictive at least twice within the past 6 months

People with ODD are often angry and may be trying to induce a negative emotional response

Importance of oppositional defiant disorder (ODD)

Negative attitude - often accompanies ADHD:

Person feels bad and takes it out on others

→ angry and uncooperative

This is Oppositional Defiant Disorder: ODD

Adult equivalent: Antisocial Personality Disorder

ODD may mask the features of ADHD

People with ODD are more moody
– the mood is set at a lower level

If you are happy you
feel motivated,
kind and cooperative

Good attitude

If you are cranky
you feel irritable
and negative

Bad attitude

Question: How much of the time is Spike the happy boy you want him to be?
– If he is often moody and irritable (eg more than 50% of the time) this is a problem

The effect of ODD on the child

- ODD is a miserable condition – it is almost like the child's job to oppose
- The child usually knows that he/she is behaving badly or being mean and spiteful but wants to do it anyway
- He/she may therefore think that he/she is a 'bad kid'

* Mood and self-esteem are low*

ODD as a reward deficiency disorder

‘a brain reward genetic dissatisfaction or impairment that results in aberrant pleasure seeking behaviour that includes drugs, excessive food, gaming/gambling and other behaviours.’

Downs B, Oscar-Berman M, Waite R, Madigan M, Giordano J, Beley T, et al. Have We Hatched the Addiction Egg: Reward Deficiency Syndrome Solution System. Journal of genetic syndrome & gene therapy. 2013;4(136):14318.

In ODD the emotions control the behaviour

The mood prevents the brain from being able to function

- Oppositional defiant disorder (ODD) is often a difficult condition to understand and manage.
- It can be useful to think of it as a condition in which the mood is set lower than normal
- The low mood influences behaviour – with maladaptive reward seeking
- Decisions that are driven by emotion may not be rational

When the mood is low there are certain types of decisions that may be made.

We can call these the ‘Rules of ODD’.

It may be helpful to have a list of these rules, so that parents and children can recognise when it is the ODD that is driving the behaviour.

In ODD the emotions control the behaviour

The mood prevents the brain from being able to function

Rules of ODD

- Never admit to being wrong
- Always argue or disagree
- The answer to any request is – No!
- Look for every opportunity to get the better of someone
- Always try to win
- Winning the argument is more important than reason or fairness
- Try to appear innocent by blaming someone else

Poulton A, Nivendkar M, Rajabalee N, Puusepp-Benazzouz H, Liu A, Bhurawala H. Rules of Oppositional Defiant Disorder: A New Therapeutic Concept. Austin J Psychiatry Behav Sci. 2022;8(1). https://austinpublishinggroup.com/psychiatry-behavioral-sciences/fulltext/ajpbs-v8-id1087.pdf

Rules of ODD – How to use them

Teacher says

- I think you're following the Rules of ODD
- These are the Rules of ODD
- They are very bad Rules
- You do not have to follow the Rules of ODD
- You are letting the ODD make your decisions
- You can make your own much better decisions

Rules of ODD

- Never admit to being wrong
- Always argue or disagree
- The answer to any request is – No!
- Look for opportunities to get the better of someone
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The child's autonomy is asserted as separate from their condition – it is NOT that they are a 'bad kid'

The teacher expresses confidence that the child is more capable than their poor decisions would suggest

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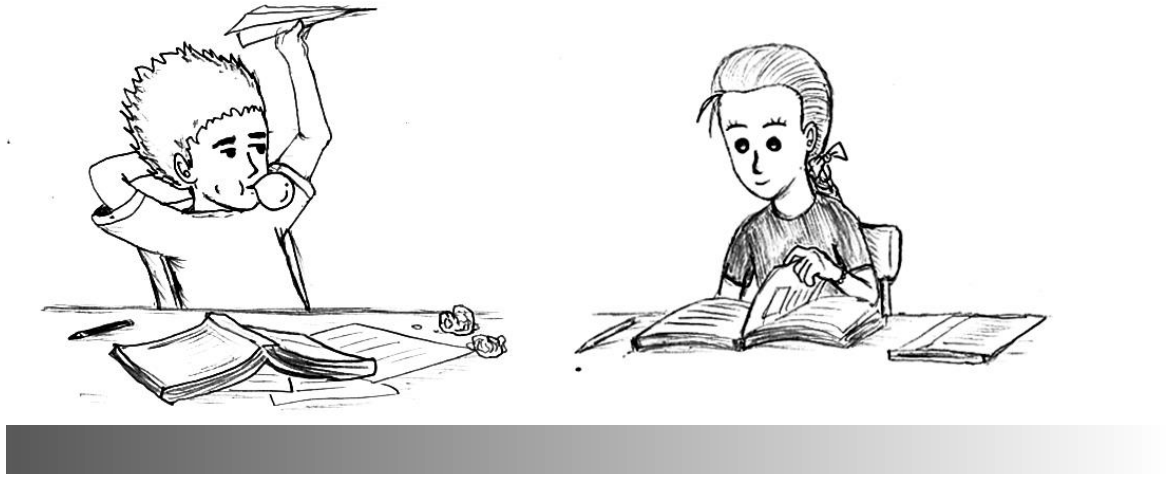
Why do we see so much ODD in ADHD?

ADHD as a continuum

Some people clearly have ADHD



Some people clearly don't

← More ADHD Less ADHD →

In between are all shades of grey

- People may be impaired who do not meet the full diagnostic criteria[1]
- Everyone knows what it's like to struggle with concentration
- We can all relate to ADHD because all of us experience ADHD-type symptoms from time to time

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1. Caye A, Rocha TB, Anselmi L, et al. Attention-Deficit/Hyperactivity Disorder Trajectories From Childhood to Young Adulthood: Evidence From a Birth Cohort Supporting a Late-Onset Syndrome. *JAMA psychiatry (Chicago, Ill)* 2016; **73**(7): 705-12.

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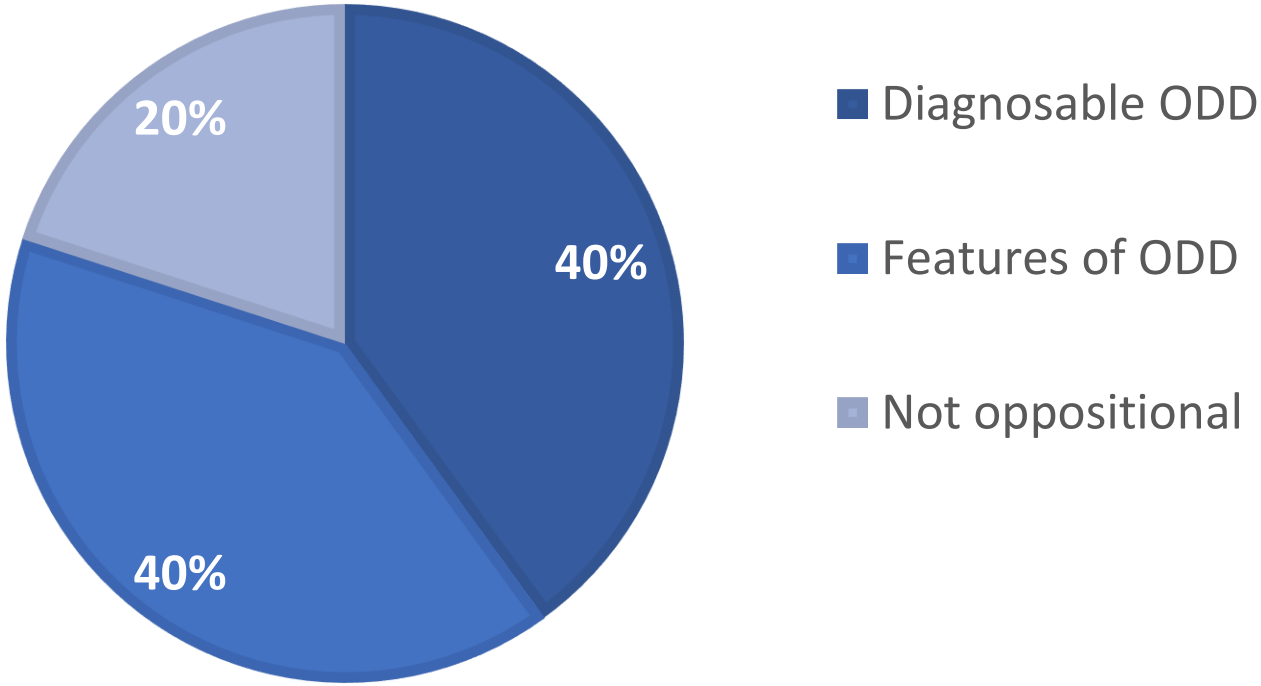
Importance of oppositional defiant disorder (ODD)

What proportion of children with ADHD also have ODD?



Most people with ODD/antisocial personality disorder also have ADHD

- Always consider ADHD

2.3 Importance of oppositional defiant disorder (ODD)

- MTA study (7-10 years) **40%** had ODD [1]
- PATS Study (3-5.5 years) **52%** had ODD [2]
- NSW children treated aged <4, **78%** were oppositional [3]
- About **80%** of children with ODD also have ADHD [4]

ODD contributes disproportionately to impairment in ADHD

- Their functioning is worse and they are diagnosed younger

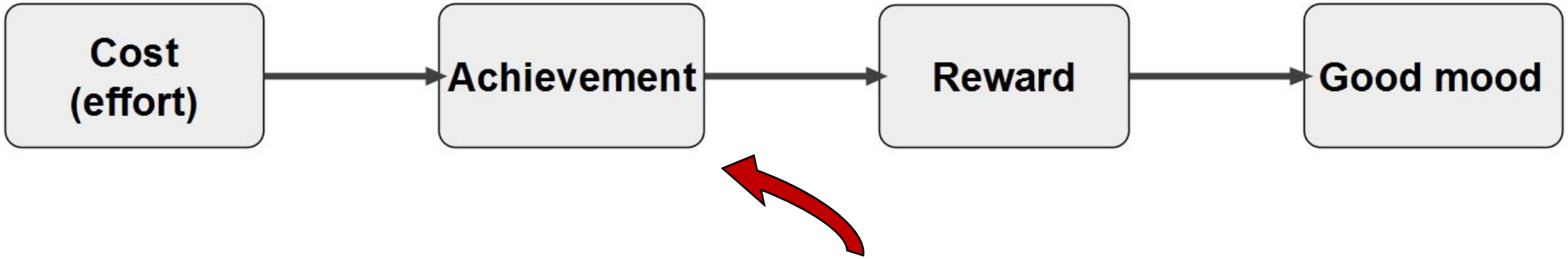
1. MTA Cooperative Group. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder Archives of General Psychiatry 1999;56:1073-1086.
2. Greenhill L, Kollins S, Abikoff H, McCracken J, Riddle M, Swanson J, et al. Efficacy and safety of immediate-release methylphenidate treatment for preschoolers with ADHD. Journal of the American Academy of Child and Adolescent Psychiatry 2006;45:1284-1293.
3. Eysbouts YK, Poulton A, Salmelainen P. Stimulant Medication in Preschool Children in New South Wales. Journal of Paediatrics and Child Health 2011;47:870-874.
4. Greene RW, Biederman J, Zerwas S, Monuteaux MC, Goring JC, Faraone SV. Psychiatric comorbidity, family dysfunction, and social impairment in referred youth with oppositional defiant disorder. American Journal of Psychiatry 2002;159:1214-1224.

Behaviour management

- Clear expectations
- Rewarding good behaviour
- Ignoring bad behaviour
- Meaningful consequences

Spike does a great piece of work
His teacher praises him
He gives her a knowing look, screws his work up and throws it on the floor
His teacher does all the right things – why doesn't this management work?

For most people the tasks of the day are manageable and rewarding



- Getting dressed and ready
- Doing household chores
- Doing tasks at school or work

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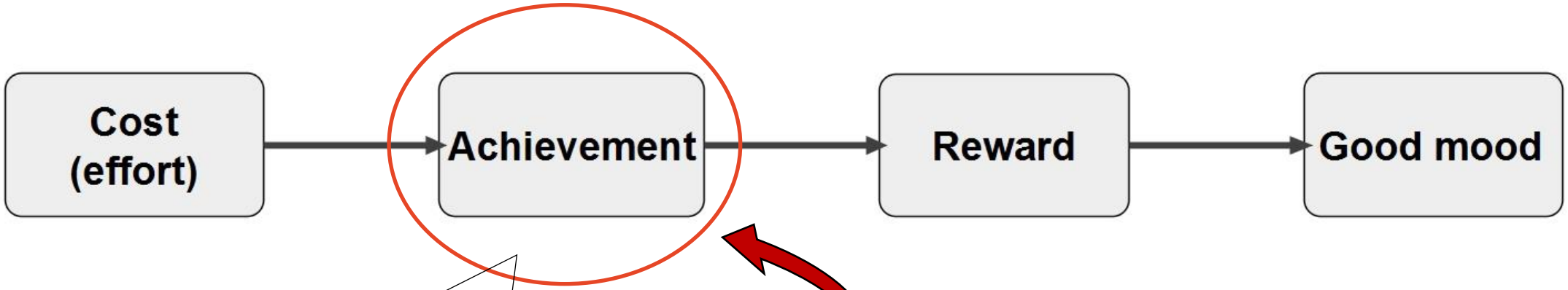
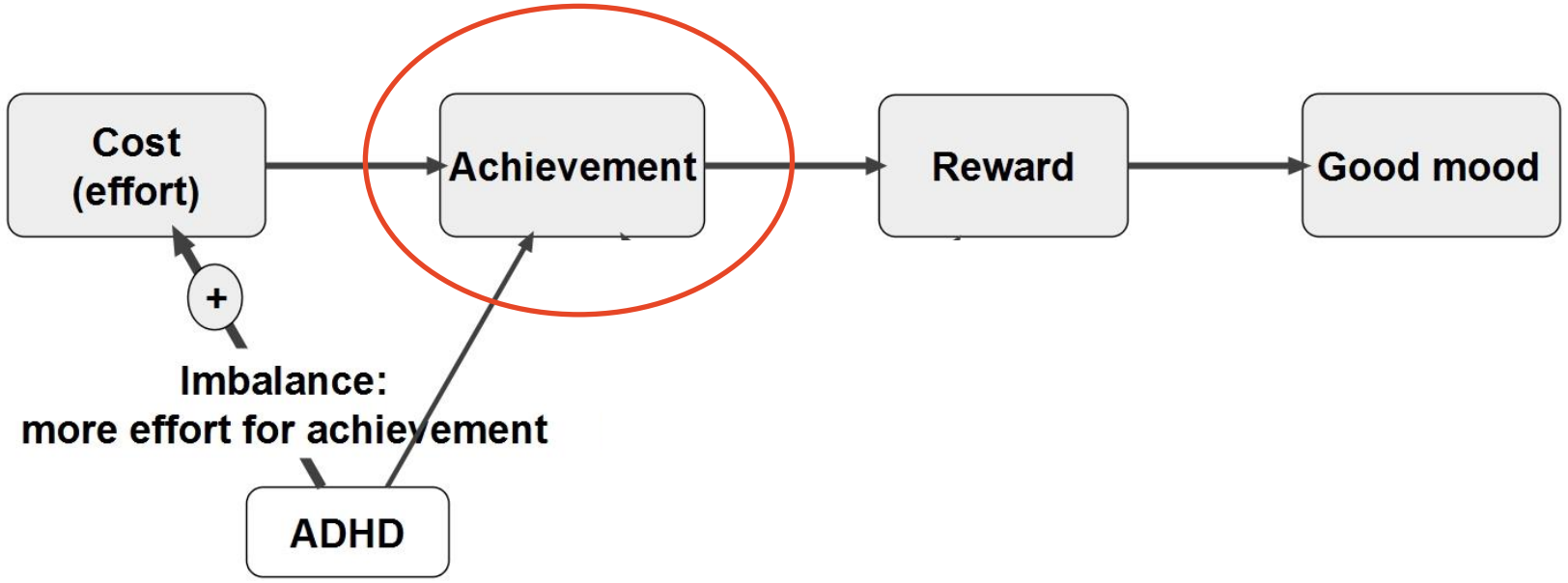


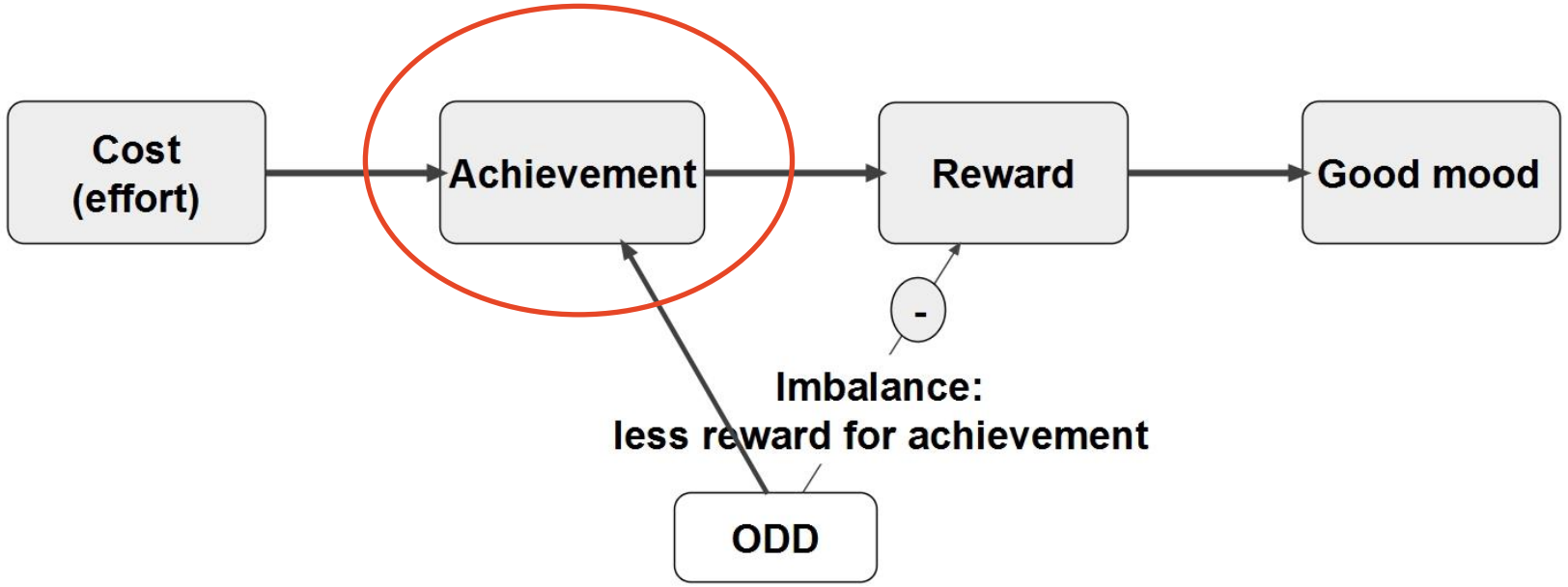
Lack of achievement/task completion is part of the assessment of ADHD

- Getting dressed and ready
- Doing household chores
- Doing tasks at school or work

In ADHD the cost (effort) is higher



In ODD the reward (satisfaction) is lower



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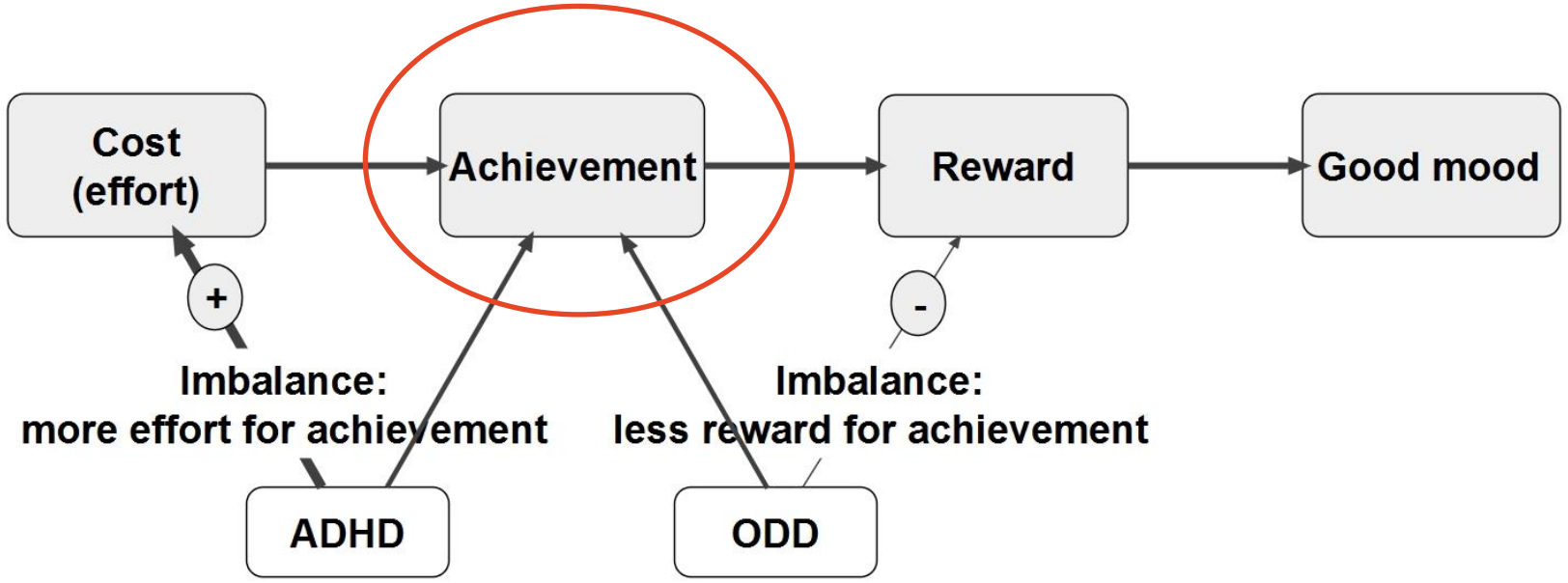
ADHD and ODD independently contribute to the lower levels of achievement



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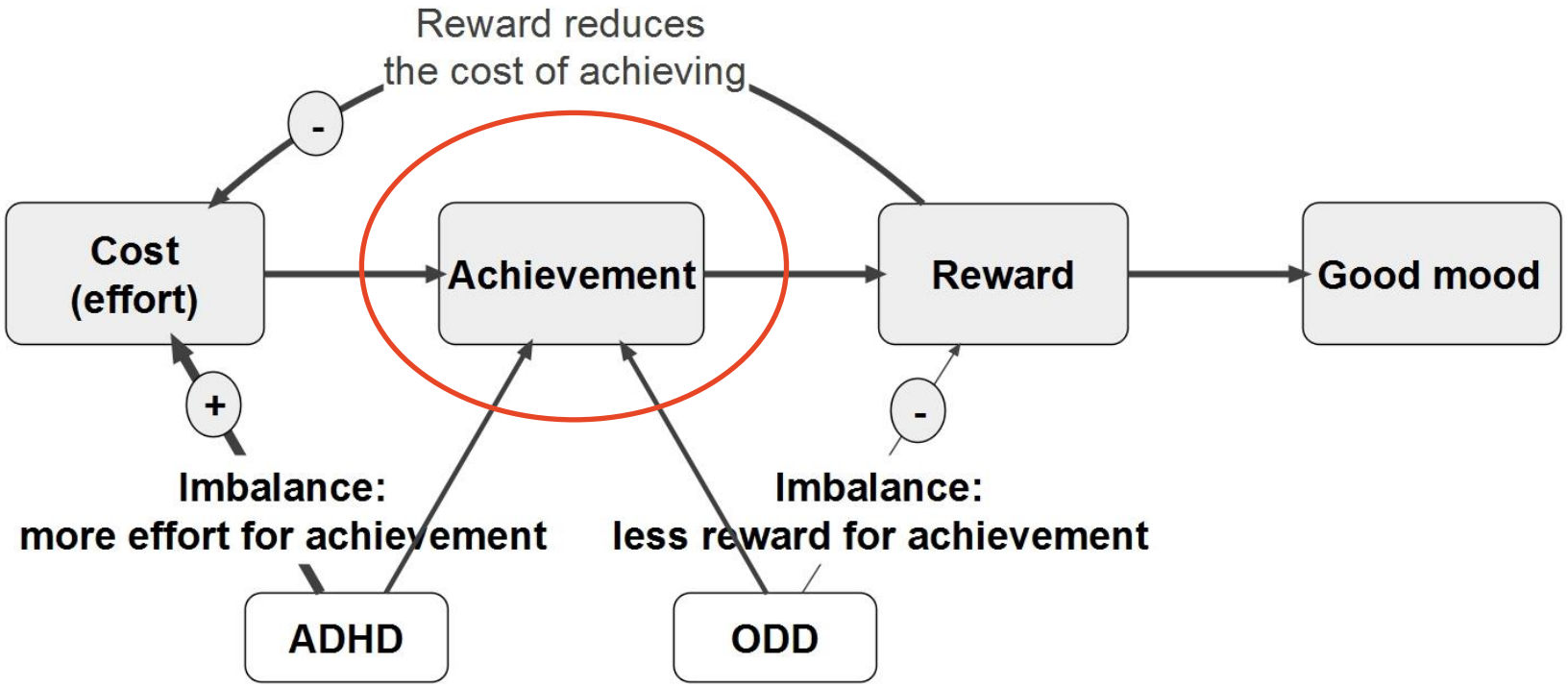

Poulton A, Nanan R. The attention deficit hyperactivity disorder phenotype as a summation of deficits in executive functioning and reward sensitivity: does this explain its relationship with oppositional defiant disorder? *Australas Psychiatry. 2014;22(2):174-178.*

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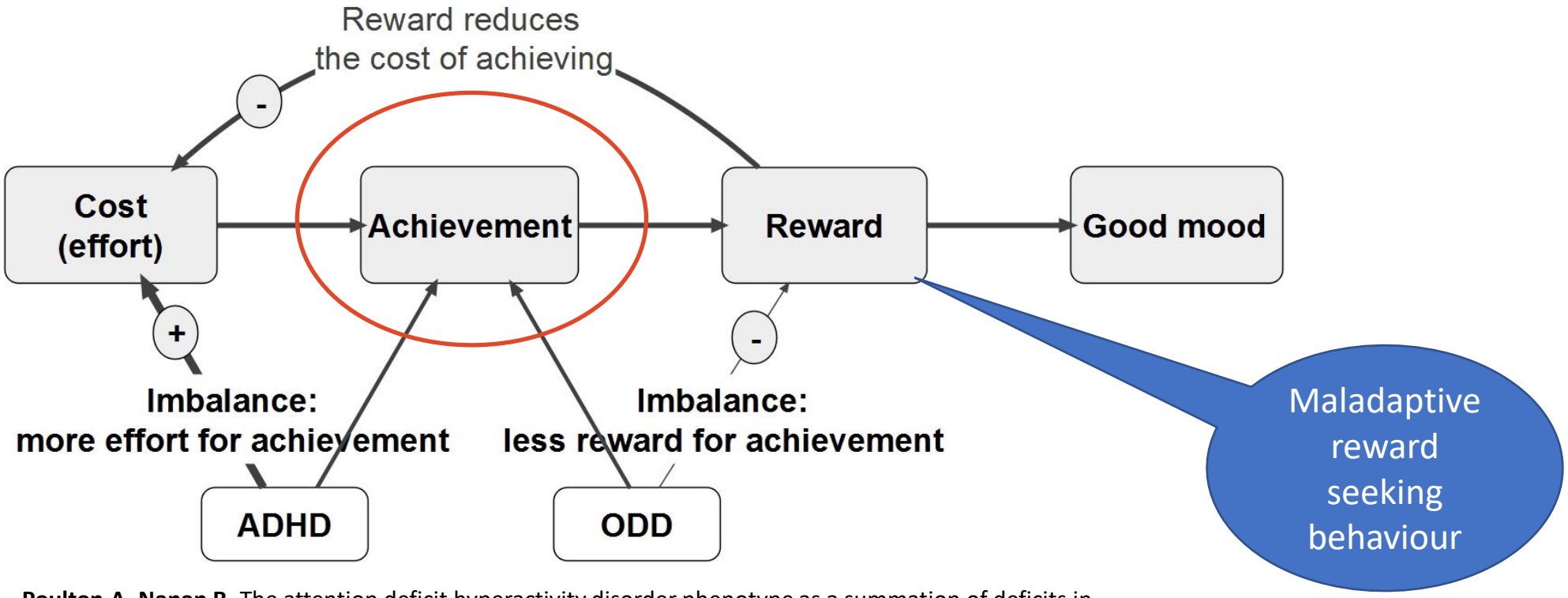

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For most primary school children, schoolwork is easy and rewarding

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For most primary school children, schoolwork is easy and rewarding

The teacher thinks that these boys have been given the same task

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Assessing mood in ADHD

- Ask about mood/temper outbursts
- Ask about the proportion time that his/her mood is happy or stable and proportion negative or moody

Possible response

‘He appears constantly angry and never happy, losing his temper and swearing if anyone changes the TV channel or disturbs him when he plays his games. The only time he is happy is when he wins on his computer game, or after he upsets the other children.’

Promoting the internal reward mechanisms

Positive Rumination

Teaching the child to appreciate his/her achievements

Strategies:

- Looking for the good points in a piece of work
- Spending time appreciating their work
- Thinking of the good things that have happened that day
- Thinking about their successes

Emotional mindfulness

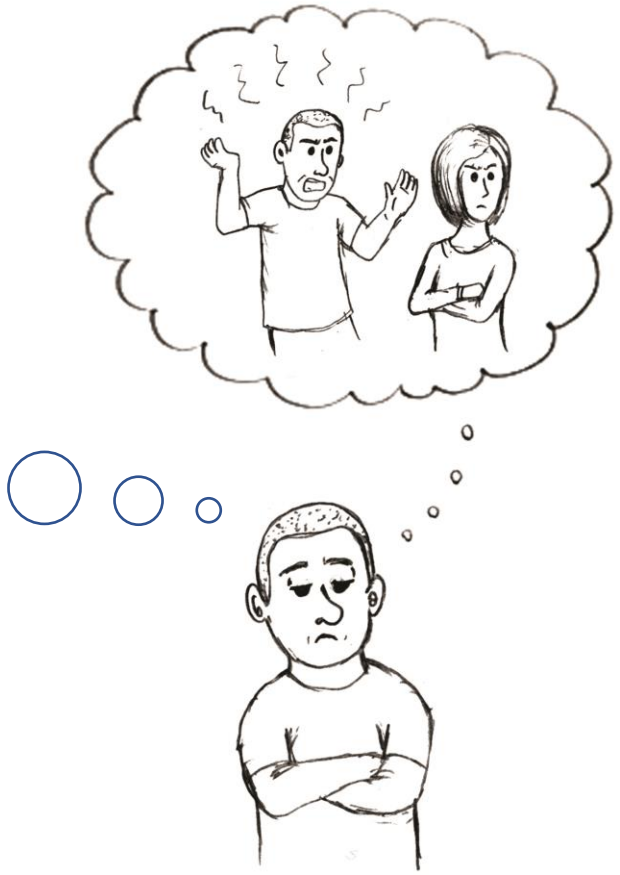
- Developing an awareness of the mood
- Using the strategies to help them to maintain a good mood

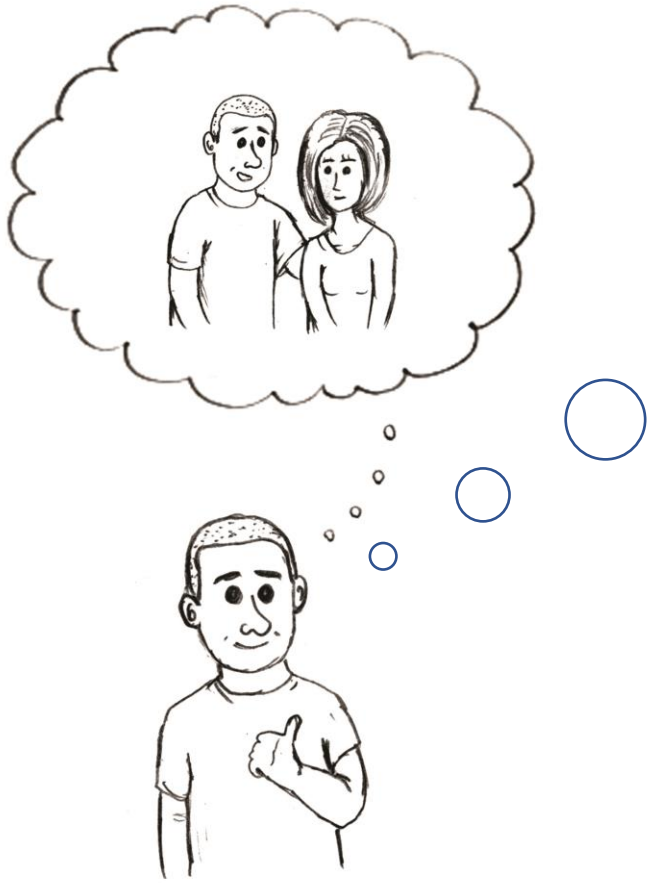
These are cognitive processes which many people would use anyway but may need to be specifically taught and practiced in ADHD

In the long term these strategies may help the person to manage their ADHD as they mature

Looking for the positives

Today I said something mean and upset my friend. I felt so bad about it.





But then I said Sorry and we made it up. It feels good to have friends

Questions?