



October's edition of the newsletter investigated sleep and its importance in learning and memory. In this month's edition of the newsletter we explore our mind-set and how this affects our learning and success.

TSP: WE WOULD LIKE TO HEAR FROM YOU!

The Thinking Skills Programme would like to hear about any use you have made of the concepts and ideas that have been shared with you about thinking. We have heard from a few people who have developed working practices and ideas in their own areas, and we would like to collate these to share more widely. What has or has not worked for you? Anything we learn from your experiences in promoting effective thinking! Please send any contributions to the address at the end of this newsletter.

MIND-SET

Your attitude to thinking has been described as your "mind-set". Mind-set can explain why intelligence and talent don't necessarily bring success and how our mind-set can stand in the way of success. Intelligence, personality, creativity are all a matter of our mind-sets¹.

DIFFERENT TYPES OF MIND-SET

Everyone has 1 of 2 mind-sets! People who believe intelligence is unchangeable have a fixed mind-set¹. People who believe intelligence is changeable and can be expanded through learning have a growth mind-set¹. It is thought that mind-sets develop in childhood and adulthood, driving every aspect of our lives; as much of our personality grows out of our mind-set. Academic and occupational success is dependent not only on cognitive ability but also a person's beliefs about learning and intelligence. Fundamentally, mind-set is associated with how one reacts to failure²; in some instances this can prevent you from fulfilling your potential. Fixed mind-set individuals have the tendency to believe that mistakes signify a lack of ability; meaning that they will disengage from a task when they 'err'². Growth mind-set people view failure as a potential for constructive feedback and are more likely

to pay more attention to corrective information than fixed mind-sets². Therefore, growth mind-set individuals are also more likely to improve their performance from mistakes made.

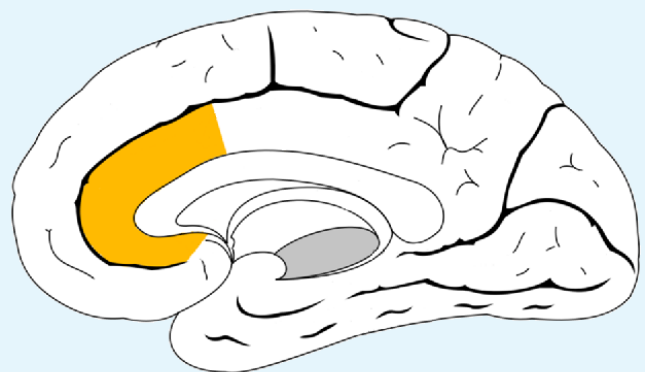
Fixed Mindset	Growth Mindset
Intelligence is static.	Intelligence can be developed.
Leads to a desire to <i>look smart</i> and therefore a tendency to	Leads to a desire to <i>learn</i> and therefore a tendency to
• avoid challenges	• embrace challenges
• give up easily due to obstacles	• persist despite obstacles
• see effort as fruitless	• see effort as path to mastery
• ignore useful feedback	• learn from criticism
• be threatened by others' success	• be inspired by others' success

A. This table indicates the main differences between the 2 types of mind-set.

HOW WE RESPOND TO ERROR

When carrying out a task, we rarely perform perfectly.³ Even if an outcome is correct, how many mistakes has it taken us to get to the outcome we desire?

Because we have prevalence for errors, some of which are of high cost, we have some brain mechanisms in place that monitor our accuracy, as well others that attempt to correct and/or compensate for the errors we make. Recent research indicates that the brain area, anterior cingulate cortex (ACC), is involved in



B. This diagram shows a mid-section of the brain. The area shaded in yellow is the anterior cingulate cortex (ACC) involved in error processing and monitoring behaviour.

monitoring behaviour including error responses². Certain activity in this area indicates the difference between the correct and erroneous response as well as showing an awareness of errors. It is suggested that growth mind-set individuals have enhanced error processing in the ACC². This means that people with this mind-set type are associated with having a heightened awareness of errors with enhanced attention to feedback from errors and subsequent correction to errors.

WHICH MIND-SET IS BETTER?

Fixed mind-sets tend to try and prove themselves time and time again. They believe that intelligence and talent are inflexible; either you're smart or you're not. This is said to be the "path of stagnation"¹. Whereas, having a growth mind-set is said to be the "path of opportunity and success"¹; knowing that intelligence can be developed and built overtime.

We can apply growth mind-set to not only to our individual everyday lives but also to whole organisations to achieve results. Employees of growth mind-set companies are 34% more likely to feel a strong sense of ownership and commitment to the company as well as are 49% likelier to say that the company promotes innovation⁴.

If you do not have a growth mind-set have no fear! Mind-sets are not 'set in stone'! Our mind-set can be changed during any stage of our life to be able to achieve success. To find out how mind-set can be changed from fixed to growth, the book **Mind-set: The new psychology of success by Carol Dweck** (one of the world's leading researchers in motivation) is brilliant for outlining mind-sets and personal growth.

REFERENCES

¹ Dweck, C.S. (2006) *Mindset: The New Psychology of Success* Random House

² Moser, J.S. *et al.* (2011) Mind your errors: evidence for a neural mechanism linking growth mind-set to adaptive posterror adjustments *Psychological Science* **22**:12:1484-1489

³ Gehring, W.J. *et al.* (1993) A neural system for error detection and compensation *Psychological Science* **4**:6:385-390

⁴ Harvard Business Review *How Companies Can Profit From a "Growth Mindset"* (2014) Available at: <https://hbr.org/2014/11/how-companies-can-profit-from-a-growth-mindset>

^A(2015) Available at: <http://darkfireth1.deviantart.com/art/Growth-mindset-511693168>

^BBrodmann, M. (2009) Available at: <https://>

commons.wikimedia.org/wiki/

File:Gray727_anterior_cingulate_cortex.png

TEASER SECTION:

ANSWER TO OCTOBER'S TEASER

What number should replace the question mark?

42 - - - 170

93 - - - 840

18 - - - 26

54 - - - 274

67 - - - ?

Answer: 409. Multiply each number on the left by its first digit and add its second digit to give the number on the right.

THIS MONTH'S TEASER

Which four letter word connects all the following words?

DRY WISH BACK WHALE MEAL CHEEK

Find the solution in next month's edition.

GOOD LINKS TO LOOK AT:

To find out more about Carol Dweck, her book and reviews on her book visit: https://books.google.co.uk/books?id=eY00ngEACAAJ&dq=mindset+the+new+psychology+of+success&hl=en&sa=X&redir_esc=y

Want to find out more about the Thinking Skills Programme and previous newsletters visit: <https://vle.cds.cranfield.ac.uk/>

To be able to access information about the programme as well as eBooklets visit the above website then click on 'Getting started for students', you will have to log in, but you can do so as a guest if you accept the terms and conditions. To find the Defence Thinking Skills Programme, there is a link on the side menu to Thinking Skills, then click the link to the Defence Thinking Skills Programme pages.

A repository, Think! Evidence, is available with access to literature of interest to Thinking skills. To take a look visit: <https://evidence.thinkportal.org/>

CONTACT US:

If you've enjoyed reading this and wish to be added to the mailing list or have any general feedback, please feel free to contact us (defac-tsp-admin@defenceacademy.mod.uk)