



May's edition of the newsletter investigated brain training, and your inner voice. In this month's edition of the newsletter we explore decision making.

DECISION MAKING

Decision making is extremely important, we make hundreds of decisions daily, most seemingly meaningless and trivial like which tie to wear today. Some decisions are automatic such that we don't even realise we're making them, like which sock to put on first, and some are vital or important decisions that take more deliberation. But how are we making these decisions and what affects our ability to make them?

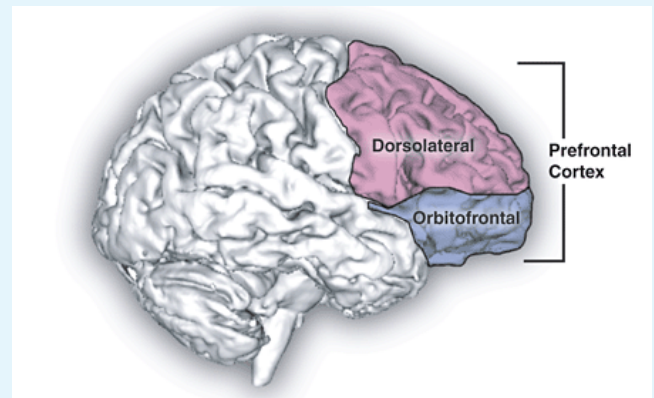


WHERE DO DECISIONS HAPPEN?

The orbitofrontal cortex, part of the prefrontal cortex of our brain involved with executive function, plays a key role in decision making. Executive function is related to the ability to determine good and bad, to differentiate among conflicting thoughts and determine future consequences of current activities as well as many other higher order thinking skills. The orbitofrontal cortex has been linked to making final decisions and when this area is damaged, can lead to a disruption in decision making, poor decision making and impulsivity.

It is not just the orbitofrontal cortex that is involved in decision making; other areas of the prefrontal cortex are also involved in different aspects of decision making. For example, making decisions with several options and flexible decisions involves a different brain region in the decision making process than decisions that require self-control.

When we make decisions or come to a conclusion it is often a result of many factors interacting with one another. How will this decision affect the people involved? How will it affect me? Social pressures, political pressures, biological influences and many other factors can influence our decisions. Our brain cells influence the decision making process in different weightings i.e. individual brain cells influence our decision making processes in different ways and amounts. However, it is very difficult to determine how much influence each brain cell has in making a final decision. This is also true for how much outside factors (for example, social pressures) influence the final decision.



B: Highlighted sections showing some components of the prefrontal cortex of the brain, including the orbitofrontal cortex.

WHAT AFFECTS OUR ABILITY TO DECISION MAKE EFFECTIVELY?

Many different factors can also affect our ability to make decisions, most notably anxiety. Anxiety leads to bad decision making especially when there are conflicting distractions involved. It is reported that anxiety disengages the prefrontal cortex of our brains, having a numbing effect on our brain cells preventing their activity, which disrupts the decision making process. To prevent the effect anxiety and stress has on our decision making capabilities, there are many different strategies that can reduce stress. Some of these include: physical activity, music, social connectivity and meditation. In previous newsletters, it has also been discussed that lighting can affect mood and decision making. With brighter light decision making has a tendency to be more emotionally charged. Therefore it is

recommended that for more rational decisions use dimmer light.

Knowing more about decision making, where it occurs/ what affects decision making, can lead to more effective decision making and help future research to target brain areas for implants with the hope to treat disorders like anxiety, depression and addiction. It can also help in developing training programmes that support decision making in difficult scenarios.

If you would like to know more about this topic, why not have a browse of the following publications and books to become a more efficient and effective decision maker:

Thinking Skills for Strategic Capability: A psychological perspective By Prof Karen Carr and Dr Emma Sparks (available on the TSP webpages on the CDS VLE)

The Thinkers Toolkit By Morgan D. Jones

The Organized Mind By Daniel. J. Levitin



REFERENCES

Haefner, R.M *et al.* (2013) Inferring decoding strategies from choice probabilities in the presence of correlated variability *Nature Neuroscience*

Rudorf, S. and Hare, T. (2014) Interactions between Dorsolateral and Ventromedial Prefrontal Cortex underlie context-dependent stimulus valuation in goal-directed choice *Journal of Neuroscience*

University of Pittsburgh (2016) Just made a bad decision? Perhaps anxiety is to blame *ScienceDaily*

UC Berkeley (2016) Can we nudge our brain activity to make healthier choices? *NeuroscienceNews*

NY photographic (2015) Available at: <http://www.thebluediamondgallery.com/tablet/d/decision-making.html>

Zahr, N.M. and Sullivan, E.V. (2008) National Institute of Health Available at: https://commons.wikimedia.org/wiki/File:Prefrontal_cortex.png

GOOD LINKS TO LOOK AT:

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/>

TEASER SECTION:

ANSWER TO MAY'S TEASER

On each row place a word beginning with 'H' to fit the clue given. When completed the name of a sport will be read down the shaded column. What is it?

Answer: Tennis. The words are HEATS, HAZEL, HAUNT, HENNA, HABIT and HOIST

Rounds in a contest	H	E	A	T	S
A round nut	H	A	Z	E	L
A frequented place	H	A	U	N	T
A dye	H	E	N	N	A
A regular practice	H	A	B	I	T
A lifting apparatus	H	O	I	S	T

THIS MONTH'S TEASER

You're standing in a hallway with three light switches on the wall, each of which turns on a different lamp inside a closed room. You can't see inside the room, and you can't open the door except to enter the room. You can enter the room only once, and when you do, all the lamps must be turned off. How can you tell which switch turns on which lamp?

Find the solution in next month's edition

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)