



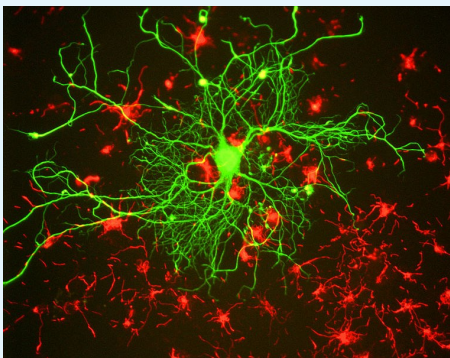
March's edition of the newsletter explored the effects of chronic stress and strategies to relieve the effects of stress. In this month's edition of the newsletter we investigate brain training, and your inner voice.

BRAIN TRAINING

In previous newsletters we have discussed the plastic nature of our brains as well as brain training. But how effective is brain training on improving our thinking and reducing the risk of cognitive decline? The answer, however, is not that simple.

DOES BRAIN TRAINING IMPROVE THINKING?

Due to the plastic nature of our brain everything we do shapes and modifies the connections between neurones inside our heads (neuroplasticity). Therefore engaging in complex cognitively stimulating occupations or activities, for example, crosswords and learning new skills, can change the connections in our brains, and help to reduce the risks of cognitive decline. A recent increase in popularity of brain training apps and games has arisen to target specific skill sets and cognitive processes to improve thinking skills, boost memory and improve concentration. But how affective are these brain training games at improving our cognition?



A: Brain cell (neurone) showing the extensive network of connections it can make with other brain cells.

TRANSFER EFFECTS

When continuously playing memory brain training games there will be an improvement within the game itself, improving your memory of that game. The important question when researching into the effectiveness of brain training, is whether there are any transfer effects? I.e.- does the improvement in memory go beyond the game and improve memory in your everyday life? This all depends on two important factors: the age group using the brain training game and the game itself. Some research has shown significant benefits for older age groups; improving memory and reasoning skills in daily living for over 60s, as well as improving reasoning and verbal learning for over 50s. Although studies

have shown important promise in preserving cognitive function, to date there has been no study long enough to test whether brain training games can prevent dementia or cognitive decline.

THE NATURE OF THE GAME

The nature of the brain training game is important as it has been found that some games do have transfer effects on improving thinking skills and memory in every day life. Whereas some games do not have any transfer effects and only show improvements within the game. Studies suggest that some 'off the shelf' games have shown better benefits to improving cognition, and better transfer effects, than brain training games. Adults who play action video games that provide adaptive training –i.e. they gradually increase in difficulty, have shown improvements in multiple aspects of thinking skills and cognition in their every day life. These include skills like better spatial resolution and localising rapid visual targets, as well as many other aspects of visual attention and cognition. This also includes improvement in video game players problem solving skills, which has not been seen in brain training users. Research has shown that playing action video games, like Super Mario, for 30 minutes a day, increased the density (amount of connections) in areas of the brain associated with navigation, strategic planning, working memory and motor function.



The brain training industry is growing more rapidly than supporting research. Although far from conclusive, at the moment more evidence suggests that games designed for entertainment have better transfer effects in improving thinking skills than brain training. So what does this mean in trying to improve and preserve thinking skills and cognition? Stay mentally active, do the crossword puzzles and learn new skills. Try brain training or video games and see if there is an improvement with your thinking. Nothing is set in stone.

YOUR INNER VOICE

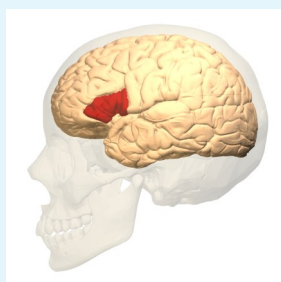
The odd task of thinking about thinking- think too much about it and you can struggle to get your head around the concept. That voice inside your head, your own stream of consciousness, an internal monologue or dialogue, is often

referred to as the inner voice or inner speech. Your inner voice is not only important for cognition and thinking skills but also has a role in processes like self-control and self-awareness. To fully understand how inner speech plays a roll in cognitive processes, researchers first need to look into the different properties and forms of inner speech.

WHAT IS INNER SPEECH?

It is often reported that your train of thought unfolds more quickly than normal speech ought to allow. How this comes about is quite ambiguous, but there are many theories, including the idea that your inner voice is shortened; so for example, it may be unlikely for you to say to yourself a sentence like 'the dog got out of the garden again', you may just say 'the dog' since that contains all the information you need to express to yourself; an abbreviated or condensed version of what you may say aloud. Another is the idea that your inner voice is unhampered by slower motor processes, so is therefore quicker. It has been found that spontaneous inner speech and the inner voice that you have when you read text, are different; research has shown that your reading inner voice does in fact have an accent. Your inner voice is individual to you, this can be seen not only with the accent your inner voice has, but the form in which it presents itself. For example, deaf people who often communicate in sign language often talk to themselves in sign language too.

With many different forms of inner speech, research has found that dialogic forms of inner speech are likely to use a different range of regions in the brain from monologic forms of inner speech. Research and functional imaging has linked inner speech to areas in the brain important in normal speech



C: Broca's area in the brain, highlighted in red, is one of the regions involved in normal speech and inner speech. This may suggest that there is an overlap between our inner and outer speech.

WHY IS INNER SPEECH IMPORTANT?

This complex and varied phenomenon is very important in many cognitive processes and thinking, especially in processes requiring planning, control, memory and a variety of other regulatory functions. For example, research has found that suppressing inner speech - (this can be as simple as repeating a word out loud to oneself, a technique called articulatory suppression), can lead to performing worse on spatial tasks and tasks involving impulse control. Inner speech may also play a role in regulatory behaviour and self-understanding i.e. evaluating your actions or motivating them. It has also been suggested that inner speech may allow for communication

between cognitive systems, which could lead to more complex thinking. However, this may not always be beneficial to our well being. Inner speech may contribute to anxiety and depression as when we worry, we often do it in words, keeping thoughts in our heads that would be better off discarded.

There is much more research that needs to be undertaken about our inner speech, and its role in our thinking and behaviour. But one thing is certain, inner speech takes many forms, such as dialogic, monologic or your reading inner voice. And these forms play roles in different processes, some in self-regulation and motivation, others in memory and other cognitive processes and thinking. Understanding inner speech is important, research in this area will help provide clarity into what we mean by "thinking" and insight into how language, cognition and consciousness interact.

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TEASER SECTION:

ANSWER TO MARCH'S TEASER

If Manchester reached 31C, Glasgow reached 30C, Southampton reached 33C and even Inverness reached 28C.

What temperature did Leicester reach?

Answer: 30C. The alphabetical values of the first and last letters are added together to give the temperature.

THIS MONTH'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?

Find the solution in next month's edition.

Rounds in a contest						
A round nut						
A frequented place						
A dye						
A regular practice						
A lifting apparatus						

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