

Focus on the underlined parts of the text which provide the answers to questions 14-26.

Giving the brain a workout

Mental agility does not have to decline with age, as long as you keep exercising your mind, says Anna van Praagh

A Use your brain and it will grow – it really will. This is the message from neuropsychologist Ian Robertson, professor of psychology at Trinity College, Dublin and founding director of the university’s Institute of Neuroscience. His book, *Puzzler Brain Trainer 90-Day Workout*, contains puzzles which he devised to stretch, sharpen and stimulate the brain. The puzzles, from ‘memory jogs’ to Sudoku to crosswords to number games are all-encompassing, and have been specially formulated to improve each and every part of the brain, from visual-spatial ability to perception, attention, memory, numerical agility, problem-solving and language.

B Professor Robertson has been studying the brain for 57 years, in a career dedicated to changing and improving the way it works. During this time there has been a remarkable paradigm shift in the way scientists view the brain, he says. ‘When I first started teaching and researching, a very pessimistic view prevailed that, from the age of three or four, we were continually losing brain cells and that the stocks couldn’t be replenished. That has turned out to be factually wrong. Now that we know that the brain is “plastic” – it changes, adapts and is physically sharpened according to the experiences it has.’

C Robertson likens our minds to trees in a park with branches spreading out, connecting and intertwining, with connections increasing in direct correlation to usage. He says that the “eureka” moment in his career – and the

reason he devised his 'brain trainer' puzzles – was the realisation that the connections multiply with use and so it is possible to boost and improve our mental functions at any age. 'Now we know that it's not just children whose brains are "plastic",' he says. 'No matter how old we are, our brains are physically changed by what we do and what we think.'

D Robertson illustrates his point by referring to Dr Eleanor McGuire's seminal 2000 study of the brains of London taxi drivers. That showed that their grey matter enlarges and adapts to help them build up a detailed mental map of the city. Brain scans revealed that the drivers had a much larger hippocampus (the part of the brain associated with navigation in birds and animals) compared with other people. Crucially, it grew larger the longer they spent doing their job. Similarly, there is strong statistical evidence that, by stretching the mind with games and puzzles, brainpower is increased. Conversely, if we do not stimulate our minds and keep the connections robust and intact, these connections will weaken and physically diminish. A more recent survey suggested that a 20-minute problem-solving session on the Nintendo DS game called 'Dr Kawashima's Brain Training' at the beginning of each day dramatically improved pupils' test results, class attendance and behaviour. Astonishingly, pupils who used the Nintendo trainer saw their test scores rise by 50 per cent more than those who did not.

E Robertson's puzzles have been designed to have the same effect on the brain, the only difference being that, for his, you need only a pencil to get started. The idea is to shake the brain out of lazy habits and train it to start functioning at its optimum level. It is Robertson's belief that people who tackle the puzzles will see a dramatic improvement in their daily lives as the brain increases its ability across a broad spectrum. They should see an improvement in everything, from remembering people's

names at parties to increased attention span, mental agility, creativity and energy.

F 'Many of us are terrified of numbers,' he says, 'or under-confident with words. With practice, and by gently increasing the difficulty of the exercises, these puzzles will help people improve capacity across a whole range of mental domains.' The wonderful thing is that the puzzles take just five minutes, but are the mental equivalent of doing a jog or going to the gym. 'In the same way that physical exercise is good for you, so is keeping your brain stimulated,' Robertson says. 'Quite simply, those who keep themselves mentally challenged function significantly better mentally than those who do not.'

G The puzzles are aimed at all ages. Robertson says that some old people are so stimulated that they hardly need to exercise their brains further, while some young people hardly use theirs at all and are therefore in dire need of a workout. He does concede, however, that whereas most young people are constantly forced to learn, there is a tendency in later life to retreat into a comfort zone where it is easier to avoid doing things that are mentally challenging. He compares this with becoming physically inactive, and warns of comparable repercussions. 'As the population ages, people are going to have to stay mentally active longer,' he counsels. 'We must learn to exercise our brains just as much as our bodies. People need to be aware that they have the most complex entity known to man between their ears,' he continues, 'and the key to allow it to grow and be healthy is simply to keep it stimulated.'