The Economist

Video games
The skills from zapping 'em

Playing fast-action video games helps decision-making

Sep 16th 2010 | From the print edition

Getty Images At least he might be a better driver

THE relentless march of technology into everyday life has always given rise to debate about whether it is a good or a bad thing. Some believe that the internet and computer software are making humans more stupid or shallow. But others argue that computer programs in the form of video games can make people smarter or improve specific skills, such as spatial awareness. Indeed, an entire industry has emerged to help people "train" or improve their brains.

Many scientific studies have shown that video games can improve human performance in sensory and perceptual tasks, involving hand-to-eye co-ordination, as well as those that require a lot of attention. But the improvement seems to come only in the task that a game trains you for. This is not surprising. The real question is whether video games are capable of providing more general gains in performance.

Shawn Green, Alexandre Pouget and Daphne Bavelier, from the University of Rochester, in New York state, set out to find an answer. They recruited a group of video-gamers and compared their reaction skills with a group of non-players. The gamers had all spent at least five hours a week on action games in the previous year.

The study, reported in *Current Biology*, involved a number of experiments. In one, the participants had to watch 12 dots moving randomly on a screen and quickly assess their aggregate direction of movement. Another test asked participants to work out the direction of specific sounds embedded within stereo white noise. In both tests the video-gamers did better. However, the scientists were aware that gamers could have been born with improved abilities to perform such tasks, which were possibly what attracted them to gaming in the

first place. Consequently, a third test was necessary to see if these abilities could have been learnt.

The non-gaming volunteers were put through 50 hours of video-game training. For some this involved playing fast-action shoot-'em-up games such as "Call of Duty 2" and "Unreal Tournament", but others were given a slow-moving life-strategy game, "The Sims 2". The researchers found that those trained with action games raised their performance to the level of the experienced gamers. Moreover, they were more efficient in their use of visual or auditory evidence than those playing with the Sims. The action gamers were up to 25% faster at coming to a conclusion and they answered just as many questions correctly.

The researchers conclude that video-games players develop an enhanced sensitivity to what is going on around them and that this may help with activities such as multitasking, driving, reading small print, navigation and keeping track of friends or children in a crowd. The precise neural mechanism for this effect, however, is still unknown.

What is known is that people make decisions based on probabilities that are constantly being calculated and refined in their heads—something called "probabilistic inference". The brain collects small pieces of information, eventually gathering enough to make an accurate decision. When driving a car, for example, many probabilities will be collated to make decisions such as whether or not to brake. The more efficient someone is at collecting visual and auditory information, the faster he can reach the threshold needed to make a decision.

One implication of this work is that reaction times in the population will probably improve with the rise of fast-action video-games. There are a lot of players: last year a report estimated that 67% of American households contained at least one video-gamer. And if video-gamers are really better equipped to make quick decisions, they might also turn out to be better drivers and end up in fewer accidents. However, the notion that gamers acquire some minor physical skills may not pacify concerned parents. What, after all, of the skills they are not acquiring when shooting virtual cops instead of reading or talking?

From the print edition: Science and technology