Planned actions improve the way we process information

January 16 2012

Preparing to act in a particular way can improve the way we process information, and this has potential implications for those with learning disabilities. Researchers funded by the Economic and Social Research Council (ESRC) have shown that using a grabbing action with our hands can help our processing of visual information.

'The research is still at an early stage,' cautions Dr Ed Symes of Plymouth University. 'But our next step is to see how these results might inform ways of helping children with severe learning difficulties.'

The discovery was made in an experiment on what is known as 'change blindness'. Think of spot the difference games – researchers use the problem of seeing changes in almost identical pictures to see if preparing to act can help us to spot these changes.

The study found that if people were asked to look at two pictures of fruit alternating on a computer screen, they noticed which fruit was different quicker if they were going to grasp an object similar in size of the fruit. Dr Symes found that the 'intention' to grasp something helps with the processing of visual information.

Dr Symes asked his participants to look at pictures of both large and small fruits – apples, oranges, pears, lemons, mangos, apricots, strawberries and gooseberries etc. When the participants detected which fruit had changed, the participants had to grasp one of two devices. The key to this was that one device was similar in size of the small fruit and

the other was similar in size of the big fruit.

The study found that the intention to grasp the small device helped participants notice changes in the smaller fruits quicker. Similarly, the brain processing that occurred in preparing to grasp the large device meant that participants noticed the changes in the larger fruits quicker.

Dr Symes explains this might help to improve the communication skills of children with complex physical and mental special needs. The first problem in assisting such children is assessing what they understand about the world, when they have no reliable means of communicating. They may not be able to speak and may have limited physical capabilities.

The new findings will help test different ways of establishing communication. For example, a child wants a particular toy but they are unable to point; they may be able to make other physical movements such as grasping. Preparing the action of grasping may help the child process information about the toy easier and it might help them communicate this information better. Dr Symes hopes that pairing actions such as grasps with objects such as toys could generally help the child to signal their responses more easily.

'Understanding the world around them is a major problem for these children,' says Dr Symes. 'We are now investigating whether this kind of aligning of stimuli and responses might be one way to making information processing more fluent for these children.'

More information: www.esrc.ac.uk/my-esrc/grants/RES-000-23-1497/read