



# Signing away safety

**A** TRANSPORT industry conference in February has been told that excessive road signage combined with a proliferation of in-car gadgets was threatening drivers' safety by causing them information overload. A 'motoring psychologist' from the RAC Foundation said that 'five plus or minus two' is the amount of messages or points of information that we can think of and take in at any one time, and that beyond that drivers could easily miss vital information or hazards.

Nilli Lavie is professor of psychology and brain sciences



Information overload?

at the Department of Psychology and Institute of Cognitive Neuroscience, University College London, where she heads the Attention Lab. 'I agree wholeheartedly with this assessment,' she told us. 'In fact, research in our lab has shown that people can only take in up to five units of information at once, and that any visual information beyond that is simply not perceived, even if it appears exactly where someone is looking – a state known as "inattentive blindness".'

'Other experiments have shown that when faced with attentional overload, people also lose their ability to detect

change, a phenomenon known as change blindness. In our studies they failed to detect one face changing to another, but this could easily be equated with driving stimuli, for example changing traffic lights.'

Professor Lavie and her collaborators have now tested more than 4000 people over three years as part of the Live Science programme at the Science Museum. In some experiments they varied the level of *information load* – new stimuli appeared on a computer screen and participants had to detect a given shape or letter (e.g. L) as quickly as possible from among several other shapes or letters. In other experiments they tested the effects of *mental load* – participants were presented with just one shape, but they had to concentrate very hard on that shape in order to make a perceptual decision (for example, to say which of the cross arms was slightly longer). These experiments showed that when more than five stimuli were presented, or when people were concentrating hard on one shape, they failed to notice the presence of another shape on the screen, even when it appeared exactly where they were looking. In a variation of the task, information overload also impaired participants' ability to detect when a stimulus on the screen changed.

'I would recommend that before a busy junction drivers should stop talking, turn off the radio or other distractions, and leave their mind available for what lies ahead,' Professor Lavie said. *CJ*

□ Professor Lavie's Attention Lab: [tinyurl.com/q8g2c](http://tinyurl.com/q8g2c).

### Reference

Lavie, N. (2005). Distracted and confused? Selective attention under load. *Trends in Cognitive Sciences*, 9, 75–82. [see [tinyurl.com/n99ov](http://tinyurl.com/n99ov) for PDF file]

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**I**F only James Bond and Batman could team up to tackle the world's evil-doers. On second thoughts, that's a daft idea – not only would Bond get jealous of the gadgets on Batman's utility belt but, more importantly, the two heroes occupy different fantasy worlds. That's right, as adults, not only can we distinguish between fantasy and reality, but we also understand that each fictional world is independent and self-contained. So, of course, whereas Batman knows Robin is real, we know the only place he'll see Bond is at the cinema. But would that statement make sense to a child? Do they realise that there are multiple fantasy worlds?

In an initial study, Deena Skolnick and Paul Bloom at Yale University found that, like adults, 24 children aged between three and six knew that their friends were real, whereas characters like SpongeBob were 'make-believe'. They even understood that a character from one fictional world would think a character from a different fictional world was unreal. But crucially, they tripped up when it came to the perspective of one fictional character

towards another in the same fantasy world. For example, many children said that Batman thinks Robin is make-believe.

However, it occurred to Skolnick and Bloom that the children might have been struggling to answer a conceptual question from Batman's perspective. So in a second study, they asked 25 children more physical questions like 'Can Batman touch Robin?'. Now the children's performance was more adult-like. They answered that fictional characters from different fantasy worlds could not act on each other, but that fictional characters from within the same fantasy world could. 'This allows us to reject the hypothesis that children make only a binary reality/fantasy distinction,' the researchers said. 'We found that both adults and children judge that characters from different worlds are fictional to each other, indicating that they divide the fictional space finely, perhaps creating a new fictional world for each story that they encounter.' A report on the research will be published in the journal *Cognition*. *CJ*

### DEADLINE

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