Are you listening?
People in a crowded room tend to focus their attention on one conversation, blocking out the surrounding noise. But we are quick to tune into another conversation if we hear something of interest.

Information OVERLOAD?

WHILE WE ARE AWAKE, OUR SENSES ARE CONSTANTLY PICKING UP INFORMATION ABOUT THE WORLD AROUND US. THERE IS AN ENORMOUS AMOUNT FOR US TO SEE, HEAR, SMELL, AND TOUCH – SO MUCH INFORMATION THAT OUR MINDS CANNOT TAKE IT ALL IN. INSTEAD, OUR MINDS SELECT WHAT WE NEED TO FOCUS OUR ATTENTION ON AND "FILTER OUT" THE REST.

Pay attention

Some tasks involve dealing with a lot of incoming information and sorting out what is important. As well as flying a plane, a pilot has to watch dials and gauges, and listen to instructions from air traffic control and other crew members through headphones. Donald Broadbent, a psychologist who served in the Royal Air Force during World War II, studied how pilots dealt with all this information.

OUR MIND CAN BE CONCEIVED AS A RADIO RECEIVING MANY CHANNELS AT ONCE
DONALD BROADBENT

He devised experiments in which participants wearing headphones heard different information in each ear. They were asked to concentrate on one set of information, and Broadbent found they did not register the content of the other channel. He concluded that we can only listen to one voice at once. When we are receiving information through many channels, our mind effectively closes all but the channel on which we need to focus our attention.

Tune in, block out

Broadbent's study of attention was similar to the work of information scientist Colin Cherry. Cherry was interested in how we select which channel of information we pay attention to, and separate it from other incoming information. Likening it to the way we listen to just one conversation at a noisy party, he called this the "cocktail party problem". He found that we "tune in" to things such as a particular tone of voice, and our minds block out what they consider background noise. Surprisingly, he also found that if someone in another conversation mentions our name or something that might be of interest to us, our mind switches attention. Broadbent noticed a similar effect with pilots, who switched attention from one channel to another when an urgent message came through. So, even though we are not focusing on it, our ears are still picking up information from what is filtered out, and our minds can identify key messages.

The average web surfer's attention span is just eight seconds long – shorter than the attention span of a goldfish.

Magical number 7

All this information, Broadbent suggested, goes into a short-term memory store, where just one channel is selected for attention and the rest is filtered out to prevent a bottleneck. George Armitage Miller described this short-term memory as a place where information is processed, especially before it is stored in long-term memory. Rather than examining how the information is selected for attention, he wanted to know how much information this short-term, or "working", memory could hold. In experiments playing a series of tones or displaying a number of dots briefly on a screen, he found that we can only take in about seven things at a time, and concluded that the capacity of working memory is limited to about seven items, which he called the magical number.

SHORT-TERM MEMORY CAN HOLD ABOUT SEVEN ITEMS AT ONE TIME
GEORGE ARMITAGE MILLER

INVISIBLE APE

In a study to test our attention, participants watched a video of people passing a basketball, and were asked to count the number of passes. Most participants were so engrossed in counting the passes that they failed to spot a person dressed in a gorilla suit walking right through the centre of the scene.