Hyper-binding ain't for sissies

January 27, 2010

Imagine this hypothetical scenario: You're at a cocktail party and the host introduces you to a stranger, whose name is Jeremy. It's a crowded party, and as you chat with Jeremy, you're also picking up snippets of another conversation nearby. Something about a big football game on Sunday. It doesn't concern you, so you try to tune it out. You have a short but pleasant conversation with Jeremy, then go on to mingle with other guests.

What do you remember when you run into Jeremy the next day? Well, if you're young, you will probably recognize Jeremy's face and associate his face with his name. That's normal social memory. But if you're older, you may have a very different kind of association: You may inexplicably link Jeremy with the upcoming football game. That overheard chatter about football is an irrelevant piece of information—you don't even like football much. But your mind has been distracted by it, and it has connected that unimportant tidbit with your newly forged memory of Jeremy.

This is just a theory, which scientists call "hyper-binding." That's really just a jargony way of saying that the elderly remember a lot of useless information by attaching it to important new learning. But according to new research from the University of Toronto, such seemingly haphazard learning might be a blessing in disguise for the elderly. Psychological scientists Karen Campbell, Lynn Hasher and Ruthann Thomas recently ran a laboratory version of the cocktail party conversation to see if the phenomenon is indeed unique to the elderly—and to explore its possible benefits.

The experiments were fairly technical, but here's the gist: The researchers recruited two groups of volunteers, the first about 19 years old and the second in the mid-60s. They showed all of them a string of pictures that were superimposed with irrelevant words. That's like meeting Jeremy and hearing sports chatter at the same time. The volunteers were told to ignore the irrelevant words, and later on they were given a memory test for pictures and words in different combinations. They wanted to compare the older and younger minds at work.

The results were dramatic. As reported on-line this week in the journal *Psychological Science*, the older volunteers were clearly unable to ignore the distracting information even when they were instructed to. They stored away the irrelevant words by linking them tightly with their corresponding pictures in memory. What this suggests is that the elderly have weaker mental regulation and a broader "bandwidth," taking in important and unimportant information indiscriminately. They store this new knowledge for later use and what's more, they do this without even being aware of it.

Wouldn't such distractibility be a terrible hindrance? Wouldn't it just clutter up the mind with a lot of junk information? Not so, say the Toronto scientists. In fact, it may well be an advantage for the elderly. Aging often brings with it some mild cognitive declines—and indeed the elderly were slower and less accurate in some parts of these memory experiments. But awareness of how events connect in everyday life—even seemingly irrelevant events—may play a critical role in certain kinds of reasoning and

judgment. In this way, distractibility may surreptitiously bolster everyday problem-solving.

The fact is, we never really know for sure what information in our world is important or useless—not when we're first encountering it. The elderly mind may not be as fleet as it once was, but by being unfiltered, it perhaps is making connections that aren't literal or obvious, and can be insightful. It might even be the foundation of a novel kind of intuition that comes with aging, or perhaps even what we call wisdom.

For more insights into the quirks of human nature, visit the "Full Frontal Psychology" blog at True/Slant. Excerpts from "We're Only Human" also appear regularly in the magazine *Scientific American Mind*. Wray Herbert's book, *On Second Thought*, will be published by Crown in September