University of Lethbridge News Release

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Fulbright Visiting Professor investigates learning and memory

Humans possess different types of long-term memory and as a cognitive neuroscientist, Dr. Irene Kan has conducted research into the workings of memory systems and how they might support each other in the event of a brain injury.

Kan, associate professor in the Department of Psychology at Villanova University in Pennsylvania, is at the University of Lethbridge this semester as a Fulbright Visiting Professor and Visiting Researcher. She will be collaborating with neuroscientists at the Canadian Centre for Behavioural Neuroscience (CCBN).

“I’m interested in human long-term memory, which can be thought of as information that we have stored away and can call back later when we need that information,” says Kan. “The approach that I have been taking over the last 10 years or so is a neuropsychological approach, which means that I look at the effects of brain damage on memory functions. I work with different types of brain injury patients, primarily those with strokes.”

Kan is interested in episodic memory and semantic memory. Semantic memory refers to general world knowledge, for example, knowing that pancakes are usually eaten for breakfast or that McDonald’s is a fast-food restaurant. Episodic memory relates more to personal experiences, such as remembering the last time one ate pancakes or visited McDonald’s.

“One thing that I’m particularly interested in is how these two types of memory interact with each other,” says Kan. “For quite a few years now, I’ve been working with patients who experience amnesia.”

Patients with amnesia tend to have impairments in episodic memory. For example, they wouldn’t be able to answer a question about what they had for dinner the previous night. However, if they were asked what the word ‘dinner’ means, they would be able to say that it’s usually the last meal of the day and eaten in the evening.

“I’m interested in understanding whether you could rely on this fairly preserved system—the semantic system—to help you with the episodic system, that is, if you can use this intact system to bootstrap this impaired system,” says Kan.

Research done in Kan's lab and other labs has provided some evidence that semantic memory can be used to help enhance learning of the episodic system. Researchers Are hopeful that these basic science findings may have implications for therapeutic interventions in the future.

Kan says she pursued a career investigating memory because she found the subject piqued her curiosity in a way no other topic did.

"Memory has always been one of those topics that I just find fascinating," she says. "I would pick up a paper and read about a recent experiment and I would try to think of the next natural steps. Or a relevant idea will come to mind hours later. It's always been intellectually interesting for me. There's still so many unanswered questions."

While at the U of L, Kan hopes to explore the similarities and differences between animal and human models of memory.

"The faculty at the CCBN is such a strong group of neuroscientists and we have many similar interests from the perspective of memory. Many of them come at the question from an animal model, particularly rodents, and I come at the question from the human perspective. I think it's important and interesting that we try to talk to each other," Kan says.

In addition to learning about animal models of memory, Kan will connect with faculty in kinesiology to explore common interests in the effects of healthy aging on memory functions.

This news release can be found online.

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Contact:
Caroline Zentner, public affairs advisor
403-394-3975 or 403-795-5403 (cell)
caroline.zentner@uleth.ca