

Wandering minds and dysfunctional emotions

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Most of us experience the world in two different states of mind. In one, we're attentive and focused on what we're doing, and in the other we wander through our mental landscape. These states of mind wandering

occur 30 to 50 percent of our daily lives says Dr. Effie Pereira, the inaugural Lupina Foundation Postdoctoral Research Fellow in the Faculty of Arts. While science has studied states of attention for over a century, mind wandering remains a lot less understood, she adds.

Pereira's previous research was one of the first to identify that the predictability of mind wandering is a core factor that determines how this state of mind can affect a person for better or worse. As a cognitive scientist and postdoctoral member of Professor Daniel Smilek's Vision and Attention Lab based in Psychology, Pereira is deepening her study on the link between mind wandering and affective dysfunction—or negative mental health outcomes.

Here, Pereira unpacks her research and the app she's developing to collect real-world mind wandering data—and why Waterloo and the Lupina fellowship are a good fit for this work.

Could you tell us a bit about mind wandering?

Mind wandering can be considered a state of internal attention. One way it can occur is intentionally, when we purposely or willingly choose to shift our attention away from our immediate situation to our internal thoughts. But another way it occurs is unintentionally, where this shift happens unexpectedly or involuntarily, similar to the surprising feeling we might have when we're talking to a friend and we realize we've just lost the last minute of our conversation.

And what is affective dysfunction?

Affective states are used to define a broad range of feelings, thoughts, moods, and emotions that characterize how we're subjectively experiencing things on a moment-to-moment basis. These can

encompass positive affects like happiness and pleasure and excitement, but it can also mean negative affects, such as nervousness, frustration, and fear. So affective dysfunction is a state that occurs when an individual finds themselves temporally stuck in a negative state for either a short period of time or a very long period.

Okay, great. Now please tell us about your research project titled Unpredictable minds and dysfunctional emotions: The link between predictability of unintentional mind wandering and affective dysfunction in everyday life.

Past research supports the idea that people who tend to mind wander more tend to experience increased states of affective dysfunction—such as decreased happiness. And recent work from my advisor Dan Smilek's lab has also found that these negative affective states were specifically associated with unintentional states of mind wandering. So, there are these tight links between these two constructs. And that's where some of my work comes in.

In my Ph.D. work I found that each of us has a very specific style of mind wandering that is either very predictable or unpredictable. And it's this predictable nature of mind wandering—when you have a very cyclical or recurring pattern where you can't stop your mind from wandering—where we tend to find an association with negative outcomes. In my Lupina postdoc work, I'm exploring this link between the predictability of mind wandering and negative outcomes by focusing on the predictability of intentional versus unintentional mind wandering and how these relate to affective dysfunction.

How does the smartphone app figure into this research?

Within cognitive science, one of the things that we try to keep developing is new and novel ways to examine real world behavior—because there's really only so much that we can do to simulate this within the laboratory. But there are also ways to bring the laboratory into the real world. And that's what my work at the University of Waterloo is focusing on.

The [smartphone app](#) I'm currently developing and programming will be used by study participants who would keep it turned on during everyday activities. The app will message them at random intervals and ask them to document aspects of their mind wandering throughout the day. The notion that everyone carries their smartphone with them allows us to capture this wide and diverse range of behaviors and activities that we wouldn't really be able to test otherwise. And the app users can actually check out what their patterns of attention and mind wandering look like throughout the day. While it's not meant to be diagnostic, it is a way for individuals to feel more connected to the scientific process they're participating in.

With its emphasis on the social determinants of health, what attracted you to apply for the Lupina postdoc?

Larger demographic, societal or environmental factors, such as experiences of racism or historical trauma, are all negative determinants of health. So there's a lot more work that needs to be done to determine not just the effect, but also the intersectionality of these determinants and how they contribute to different outcomes. And while I'm a cognitive scientist who is very much focused on brain mechanisms and behavior, individuals are not independent from their environment, and I think it's vital to understand what these embedded spheres of influence mean, even within a [cognitive science](#) framework.

One of the big reasons for joining Waterloo as a postdoctoral researcher is my current advisor, Dan Smilek, who is widely regarded for his expertise in attention and [mind](#) wandering. I'm excited to be part of such a creative team within his lab and within the Psychology department as a whole, as part of the next generation of researchers that are unpacking the connection between cognitive states and health outcomes. Waterloo's research excellence and track record are just very clear—and the perfect place for me to continue my postdoc.

Provided by University of Waterloo

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