



Author Spotlight – Dr. Jessica Hazelton

Here we had the chance to learn from Dr. Jessica Hazelton about her work recently published in Biological Psychiatry. Dr. Hazelton is a post-doctoral researcher at the University of Sydney, Australia, and the Latin American Brain Health Institute (BrainLat) . Her recent paper took a transdiagnostic approach to asking about the neurobiological bases underlying the social cognition, emotional, and interoceptive deficits underlying neurodegenerative diseases.

How did you first start thinking about this research question? What was the spark?

I've always been interested in how our experiences of our bodies, emotions and social interactions are connected. In particular, I'm fascinated by what happens when this link is broken. My curiosity about this topic led me to do my PhD investigating interoception and social cognition in neurodegeneration, with a focus on early-onset dementias like behavioural-variant frontotemporal dementia (bvFTD). In two studies from my PhD, I found evidence to suggest that similar brain regions were involved in interoception and emotion recognition impairments in bvFTD. This got me thinking about the broader literature and whether we could find convergence in similar brain regions across neurodegenerative conditions, which might suggest a shared neurobiological mechanism involved across these abilities.

Tell us about your work in this paper - what was your study design?

To answer this question, we conducted a multi-modal neuroimaging meta-analysis to investigate how interoception, or the sensing of internal physiological fluctuations, emotion, and social cognition relate to brain structure and function in a diverse range of neurodegenerative diseases. From 20,593 studies, 170 met inclusion criteria (58 interoception, 65 emotion, and 47 social cognition) involving 7032 participants (4963 people with a neurodegenerative disease and 2069 healthy control participants). We conducted domain specific and disease-specific analyses, as well as conjunction analyses to investigate converging brain regions.

What was the central finding? Why was this important?

We found that in neurodegenerative disease combined for analysis, key regions of the allostatic-interoceptive network (e.g., insula, anterior cingulate cortex, amygdala, orbitofrontal cortex, thalamus, hippocampus, and striatum) were involved across interoception, emotion and social cognition. When we repeated our analyses in disease-specific groups, we found a strikingly similar pattern of results in bvFTD. People with bvFTD often present with abnormal social behaviours and have difficulties with emotion recognition, which is incredibly distressing for their families and friends. Our findings suggest that these social deficits could be due to impaired interoceptive functioning due to damage within the allostatic-interoceptive network as an underlying mechanism. This means that people with bvFTD may not be able to interpret or use signals from within their bodies to guide their behaviours.

Is there a little nugget buried in the results section that most readers might not notice?

We also repeated our main meta-analyses in other disease-specific groups, such as Alzheimer's disease, Parkinson's disease, primary progressive aphasia syndromes, and multiple sclerosis. Here, we found involvement of some, but not all of the allostatic-interoceptive brain regions, suggesting that these brain regions are also partially relevant in these neurodegenerative diseases. For the interested reader, there are also ~100 pages of supplementary materials with plenty of little nuggets.

What's next for your research?

My future research plans are to investigate allostatic-interoception and social cognition using multimodal techniques in early onset-dementias and primary psychiatric disorders. I hope that this line of research will help to refine theoretical models of interoception and will help to bridge neurological and psychiatric investigations.

If you want some tips for neuroimaging meta-analyses, or want to get in touch for potential collaborations, feel free to email me! jessica.hazelton@sydney.edu.au

What do you most enjoy about the SOBP meeting?

Unfortunately, I will not be able to attend the SOBP meeting in May, but I hope to attend the following year.

Read the full details of her work here: (in press, October 2024)

[https://www.biologicalpsychiatryjournal.com/article/S0006-3223\(24\)01697-4/abstract](https://www.biologicalpsychiatryjournal.com/article/S0006-3223(24)01697-4/abstract)