



**DEMENTIA RESEARCH
NETWORK IRELAND**

Prevention, Cure & Care for
Neurodegenerative Diseases

Researcher In Focus Series – December 2021

This month's Researcher in Focus is Dr. Unai Diaz-Orueta, who works as Assistant Professor in Neuropsychology at Maynooth University, with research focused on the improvement of cognitive screening and assessment tools for mild cognitive impairment and dementia.



What is your area of research?

I am focused on the improvement of assessment tools used for neurocognitive assessment of older adults, from preclinical to more advanced stages of a neurodegenerative disease, and that involves a focus on both widely used cognitive screening tools to broader neuropsychological tests. Early detection of mild cognitive impairment and dementia is crucial in order to put in place potential treatments and interventions that target individuals as early as possible and allows them and their relatives to carry on their latest years with the highest quality of life that is possible, and delay institutionalization for as long as possible.

This research has a focus on using a process-based approach, which implies a focus not just on the score or just the final outcome of a person doing a test, but a more detailed focus on how the person performs in the test, what kind of strategies they use to complete the test, what kind of errors they show, and what the potential underlying explanations for that performance might be in cognitive and functional terms (in other words, not focusing just on what they do, but how they do it and why). I also have a background in developing virtual reality based neuropsychological tests, so the use and integration of technology to improve the cognitive tasks we use to early detect suspected cognitive impairment is also a priority for me

(<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00361/full>).

Finally, we are extending this area of research to focus on early detection of mild cognitive impairment in individuals with low education and/or low literacy levels, which is a pending issue for cognitive screening tools, and for that I work with 2 PhD students, one IRC funded Psychology student in Maynooth (Ms. Dawn Higgins), and one neurologist (Ms. Isabel Pellicer) whose PhD I supervise through the University of Murcia in Spain, and with whom we have published the first of many studies in this area (<https://journals.sagepub.com/doi/full/10.1177/07334648211056230>)



**DEMENTIA RESEARCH
NETWORK IRELAND**

Prevention, Cure & Care for
Neurodegenerative Diseases

What sparked your interest in this area?

I got into this research on the process-based approach through a Marie Sklodowska Individual Fellowship that allowed me to come and perform a 2 year post-doc in DCU under the supervision of Professor Teresa Burke, and in collaboration with Dr. Alberto Blanco-Campal, clinical neuropsychologist at the HSE. Going back to the roots of Neuropsychology, to Luria in the USSR and Kaplan in the US, going back to the starting box, and rethinking the way cognitive assessment is being performed, and trying to build something innovative (taking the best bits of our history in the area of Neuropsychology) has been a thrilling journey and has not only sparked but also sustained my interest in this area for the years to come.

What stage are you at in your career and are there any achievements you are particularly proud of?

My career has not been a straight line at all since I got my PhD in Spain in 2006. I worked for a private research institute from 2008 to 2012, and then moved to a SME, Nesplora, also in Spain, to develop VR based neuropsychological tests. I moved to Ireland since 2016 and it has been an experience of reinventing myself while integrating my previous knowledge. So for funding agencies I might be in a limbo, since getting a PhD in 2006 sounds like too long ago to be funded as an early career researcher but, due to my time in industry and away from Academia, and just being in Ireland for the last 5 years, I sometimes feel like a newcomer.

I am particularly proud of the work performed in Nesplora and the VR based tools that have been commercialized and widely used, of the developments done in DCU to develop an improved, process-based approach version of the Montreal Cognitive Assessment (<https://www.tandfonline.com/doi/abs/10.1080/23279095.2019.1681996?journalCode=hapn21>), and also from the latest work we are developing in trying to create opportunities for a more accurate cognitive assessment of older adults with low literacy levels, as they have been the forgotten ones for too long when developing cognitive assessment tools.

What impact would you like your research to have?

I would like to see first line professionals using these cognitive tools to adopt the recommendations we are deriving from this scientific research in terms of (1) how to take more advantage of currently used cognitive screening tools, and (2) adopting new tools, even based on technology, if they are going to have an added benefit in a better characterization of cognitive profiles in mild cognitive impairment and dementia.

Who has helped or inspired you in your area of research?

Professor Teresa Burke in DCU and Dr. Alberto Blanco-Campal at the HSE. They have been wonderful mentors through all this journey and they are currently great friends and colleagues.

Contact Details: Unai Diaz-Orueta, Assistant Professor in Neuropsychology, Maynooth University

Email: unai.diazorueta@mu.ie

Research Gate: <https://www.researchgate.net/profile/Unai-Diaz-Orueta>

Twitter: [@UnaiDiazOrueta](https://twitter.com/UnaiDiazOrueta)