Dr. Vladislava Segen

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Date of birth 04.11.1995, Family status – 1 child (02.02.2013)

EMPLOYMENT

2021-present	Post-doctoral researcher, German Center for Neurodegenerative Diseases (DZNE), Principle Investigator: **Prof. Thomas Wolbers**

EDUCATION

2017-2021	PhD in Psychology (***no corrections***), Bournemouth University Supervisory Team: Prof. Jan Weiner, Dr Timothy Slattery & Prof. Marios Avraamides
2016-2017	MSc Research Methods of Psychological Sciences with ***Distinction***, Glasgow University Supervisor: Dr Guillaume Rousselet
2012-2016	BA (Honours) Psychology, ***First Class***, School of Psychological Sciences & Health, University of Strathclyde (*Maternity leave Feb 2013 – May 2013)*

PUBLICATIONS [Total=9, Google scholar citations=97]

In this review, we highlight the current state of the art knowledge on path integration in normal aging and AD across human and animal work

1. **Segen, V.*,** Ying, J.*, Morgan, E., Brandon, M., Wolbers, T., (2022), Path integration in normal aging and Alzheimer's disease. ***Trends in Cognitive Sciences***

In this series of publications, a novel bias in spatial memory and perspective taking is introduced and characterized

2. **Segen, V.**, Avraamides, M., Slattery, T., & Wiener, J. M. (2023). Biases in object location estimation: the role of rotations and translation. ***Attention, Perception, & Psychophysics***
3. **Segen, V.**, Colombo, G., Avraamides, M., Slattery, T., & Wiener, J. M. (2022). The role of memory and perspective shifts in systematic biases during object location estimation. ***Attention, Perception, & Psychophysics***
4. **Segen, V.**, Avraamides, M., Slattery, T., Colombo, G., & Wiener, J. M. (2021). Comparable performance on a spatial memory task in data collected in the lab and online. ***PLOS ONE***
5. **Segen, V.**, Colombo, G., Avraamides, M., Slattery, T., & Wiener, J. M. (2021). Perspective taking and systematic biases in object location memory. ***Attention, Perception, & Psychophysics***

The publications below focus on age-related changes in spatial encoding and response strategies using eye-tracking, virtual reality and modelling

6. **Segen, V.,** Avraamides, M., N., Slattery, T., J., & Wiener, J.,M., (2021) Age-related differences in visual encoding and response strategies contribute to spatial memory deficits. ***Memory and Cognition***
7. **Segen, V.**, Avraamides, M. N., Slattery, T. J., & Wiener, J. M. (2021). Age-related changes in visual encoding strategy preferences during a spatial memory task. ***Psychological Research***

Published Abstracts

8. Segen, V., Avraamides, M., Slattery, T., & Wiener, J. (2019). Age-related differences in the use of distal landmarks during object-location encoding. I-PERCEPTION

9. Segen, V., & Wolbers, T. (2022). Using an entorhinal cortex-based virtual reality navigation task to differentiate between individuals with and without subjective cognitive decline. Alzheimer's & Dementia, 18

MANUSCRIPTS IN-PREPARATION (first author)

1. **Segen, V.,** Kabir, R., Tiganj, Z., Streck, A., Slavik, J., Newmann, E., & Wolbers, T., 2024 Sources of path integration error in subjective cognitive decline
    a. Used computational modelling, virtual reality and blood AD biomarkers to investigate path integration in healthy aging (n=73) and pre-symptomatic AD (n=30)
2. **Segen, V.,** Stangl, M., & Wolbers, T., Evidence for altered coding of environmental boundaries in healthy
    a. fMRI study investigating behavioral characteristics of younger and older adults pertaining to use of environmental boundaries in spatial memory and related BOLD response in medial temporal lobe.
3. **Segen, V.,** Nellson, L., Flanagin, V., & Wolbers, T., Age-related structural degeneration of peripheral vestibular system linked to functional decline and reduced entorhinal cortex volume
    a. Data from Z03 superager cohort, where we applied state-of-the-art inner ear MRI imaging and segmentation to study age-related changes in the inner ear and to link it to vestibular function, and navigation.

PRESENTATIONS

International invited talks [Total = 8]

1. **FENS forum 2024, Vienna: scientific symposia** Mazed and confused: The neuronal basis for spatial impairments in Alzheimer's disease, June 2024
2. **CYENS Center of Excellence, Cyprus**: Using virtual reality to assess spatial abilities to aid early Alzheimer's disease diagnosis, August 2023
3. **University of Arizona :** Age-related changes in the precision of spatial representations, August 2022
4. **University of California Santa Barbara:** Sources of path integration errors in subjective cognitive decline, August 2022
5. **University of California, Irvine:** Aging and navigation, August 2022
6. **DZNE Minisymposium on Ageing:** Spatial navigation - a unique window into mechanisms of ageing and dementia. 2021
7. **European Academy of Neurology: Symposium on the Disorders of Spatial Orientation and Navigation** : Effects of aging and Alzheimer's disease on spatial navigation. 2021
8. **Royal Institute of Navigation (University College London):** Effects of Ageing and Dementia on Spatial Cognition, 2019

Oral presentations at national and international conferences [Total = 8]

1. **Segen, V.**, Stangl, M., Shine, J., & Wolbers, T., (2023). Altered exploration of environmental boundaries in human ageing. Spring Hippocampal Research Conference. Verona, Italy

2. **Segen, V.,** (2023) Path integration in healthy aging and subjective cognitive decline, **Tagung experimentell arbeitender Psychologen (TEAP)**, Marburg, Germany
3. **Segen, V.,** & Wolbers, T., (2023). Sources of path integration error in healthy aging and subject cognitive decline, **47th Park City Winter Conference on the Neurobiology of Learning and Memory**, Park City, USA
4. **Segen, V.,** Avraamides, M., Slattery, T., & Wiener, J., M., 2021. Object location memory in 3D space: the role of aging and perspective shifts (Blitz talk). **3rd Interdisciplinary Symposium on Spatial Cognition in Aging & Neurodegeneration (iSCAN),** Magdeburg, Germany
5. **Segen, V.,** Avraamides, M., Slattery, T., & Wiener, J., M., 2019. Flexibility of place recognition in older adults. Symposium on Integrated and Flexible Spatial Representations: Who Makes Them (When and How), and Why They Are Important at **European Society for Cognitive Psychology**, Tenerife
6. **Segen, V.,** Slattery, T., Avraamides, M., & Wiener, J., M.,2019. Age-related changes in visual attention during spatial learning. **Experimental Psychology Meeting** in Bournemouth, UK
7. **Segen, V.,** Slattery, T., Avraamides, M., & Wiener, J., M.,2019. Age-related differences in the use of distal landmarks during object-location encoding. **Scottish Vision Group Meeting**, Isle of Skye, UK. Abstract published in I-Perception, doi:10.1177/2041669519854233
8. **Segen, V.,** Slattery, T., Avraamides, M., & Wiener, J., M.,2018. A diffusion model analysis to examine age-related changes in object location memory (Blitz talk). **2nd Interdisciplinary Symposium on Spatial Cognition in Aging & Neurodegeneration (iSCAN),** Magdeburg, Germany

Selected Poster presentations at national and international conferences [Total = 12]

1. **Segen, V.,** Stangl, M., & Wolbers, T., 2024. How altered coding of environmental boundaries affects spatial memory in human aging: An fMRI Study, Society for Neuroscience (SfN) meeting, Chicago, USA
2. **Segen, V.,** Kabir, R., Tiganj, Z., & Wolbers, T., 2024 . Unravelling Path Integration Deficits in healthy aging and early Alzheimer's disease, Interdisciplinary Navigation Symposium (iNAV),
3. **Segen, V.,** Stangl., M., & Wolbers, T., 2023. Boundary Biases and Navigational Dynamics: Deciphering Spatial Strategies in Older Adults. Interdisciplinary Symposium on Spatial Cognition in Aging & Neurodegeneration (iSCAN)
4. **Segen, V.,** Avraamides, M., Wiener, J., & Wolbers, T., 2023. Systematic Bias in Object Location Memory Across Perspectives: Evidence from Immersive Virtual Reality. The European Conference on Visual Perception. Paphos, Cyprus.
5. **Segen, V.,** & Wolbers, T., 2022. Using an entorhinal cortex-based virtual reality navigation task to differentiate between individuals with and without subjective cognitive decline. Alzheimer's Association International Conference (AAIC). San Diego, USA
6. **Segen, V.,** Streck, A., Slavik, J., Wolbers, T., 2022. Characterizing sources of path integration errors in healthy older adults and those with subjective cognitive decline. Interdisciplinary Navigation Symposium (iNAV), Online meeting

7. **Segen, V.,** Colombo, G., Avraamides, M., Slattery, T., & Wiener, J., M., 2021. Difficulties in extracting spatial information induce a bias towards the use of non-spatial heuristics in a spatial memory task. Spatial Cognition, Riga, Latvia
8. **Segen, V.,** Avraamides, M., Slattery, T., & Wiener, J., M., 2018. Age-related changes in the processes underlying object location memory. 2nd Interdisciplinary Navigation Symposium, Quartier Tremblant, Canada

GRANTS AND FELLOWSHIPS

2023-2026	Velux Stiftung foundation "a vestibular approach to understanding and treating cognitive decline in old age (VESTAGE)". €354,654, **(Co-PI)**
2023-2024	Innovative Minds Grant, DZNE Foundation, investigating the link between vestibular function and spatial navigation in older adults €10,000. **(PI)**
2021- 2024	SFB 1436 Neural Resources of Cognition - Subproject B03: Grid cell integrity as a neural resource for spatial navigation and episodic memory? €588.200. **(Co-PI)**
2021	Psychology Postgraduate Affairs Group microgrant (£60)
2020	Experimental Psychology Society (EPS) study visit grant (£2252) to visit RISE, Cyprus and University of Cyprus
2018-2019	EPS Grindley travel award (£500), awarded 4 times in 2018-2019
2017	Psychology Postgraduate Affairs Group Conference Bursary (£100)
2015	Summer research internship grant (£1800)

SUPERVISION AND MENTORING

PhD students and visiting researchers

- 2022-ongoing co-supervisor PhD student “Grid Cell Contributions to Superior and Pathological Ageing”
- 2021 (3 months) Martina Laczó, M.D, PhD candidate, DZNE
- 2019-2020 (9 months) Giorgio Colombo, MSc., Bournemouth University

MSc, Undergraduate students and research assistants

- 2023-present Primary supervisor 2 MSc students

  2021 - present 3 MSc student research assistants, DZNE
- 2019 - Bachelors' dissertation supervision, co-supervisor: Prof. Jan Wiener, Bournemouth University
- 2017-2020 volunteer student research assistants, Bournemouth University (~3 students/year)

TEACHING EXPERIENCE

2022-present	MSc Integrative Neuroscience, Magdeburg: Virtual Reality for Neuroscience and Psychology course: course development, lectures, course assessment
2017- 2021	Graduate teaching assistant delivering seminars to psychology undergraduate students and marking (written and oral), Bournemouth University
2018-2019	MSc Clinical & Developmental Neuropsychology, lectures and written assignment assessment, Bournemouth University

ACADEMIC SERVICE

Ad Hoc Reviewer: *Nature Reviews Neuroscience; Human Brain Mapping; Journal of Alzheimer’s Disease; Alzheimer’s Research & Therapy; Psychonomic Bulletin & Review, Behavior Research Methods, Psychology and Aging*

Organizer of first DZNE evolution event: How to lead in Academia and Industry? 2023, a career planning and networking event aimed for ECR

Scientific committee member for the biannual Interdisciplinary Symposium on Spatial Cognition in Aging and Neurodegeneration (iSCAN), Magdeburg, Germany, 2023 (total attendance ~ 70)

fMRI multivariate pattern analysis (MVPA) workshop organizer (total attendance ~ 40), DZNE

Graduate Student Representative and Athena SWAN Graduate representative, Bournemouth University

PROFESSIONAL DEVELOPMENT AND AWARDS

2024 (upcoming)	Ernst Strüngmann Forum *Mapping the Future:* Invited participant , Frankfurt, Germany, 01-06 December)
2023	Workshop on PhD student supervision for postdocs (2-day workshop)
2021-2023	Excellence in Science program, DZNE, equivalent to 16 days of training
2022	Leadership in Science 3-day course, Berlin, Leadership sculptor
2022	Workshop on advanced fMRI analysis (MVPA)
2022	Nature Scientific Writing Masterclass
2018	Oxford Reproducibility School: Kick start your reproducible research
2018	Introduction to Education Practice for Postgraduate Research Students; A two-day course on teaching in Higher Education
2017	Erasmus+ Tools for Teaching Quantitative Thinking (TquanT) programming and statistics workshop

PUBLIC ENGAGEMENT

Pint of Science, Magdeburg, "Spatial Navigation's Role on the Roadmap to Alzheimer's Treatment", 2024

Pint of Science talk, Bournemouth, "What happens to our spatial memory when we get older", 2019

Public talk: "Studying Spatial Cognition in Ageing and Dementia" at the Improving the wellbeing and quality of life for people living with dementia workshop, Bournemouth University, 2019

HOW MY RESEARCH WAS COVERED IN THE POPULAR PRESS

FOCUS Gesundheit: „Perspektiven-Wechsel bei Alzheimer" by Bernhard Hobelsberger, 2023

Die Zeit: „Ein Licht im Dunkel" by Ulrich Bahnsen, 2022; this article in popular German newspaper covers my work on using VR to aid early Alzheimer disease diagnosis

The Guardian: "How design is helping people with dementia find their way around" by Jules Montague, 2018; this article in the popular British newspaper covers the work in my former lab, including my own PhD work pertaining to encoding strategies used by old adults to encode spatial information