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Editorial

Kicking Off 2025: February 2025 Editorial

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New year, old us – the entire team at The European Health Psychologist wishes you a belated but heartfelt Happy New Year! This year, we're excited to bring you fresh insights from health psychology, updates from the European Health Psychology Society, and so much more. To kick off 2025, we're delighted to present the following articles:

The new **Executive Committee** kicks off this issue by introducing themselves.

Phipps and colleagues present EMPOWER – the European network for postdoctoral early career & Mid-career researchers in health PsychOlogy focusing on Well-being & Empowerment of Researchers. This exciting initiative provides a supportive platform for postdoctoral and early- to mid-career academics in health psychology.

Theodoropoulou, winner of the 2023 Early Career Award from the Open Science Special Interest Group, shares an inspiring piece reflecting on her research journey and the Open Science. Congratulations, Andriana!

In a thought-provoking article, **Perski and Allen** explore how formal dynamical systems modelling can be harnessed to advance health psychology theories.

Lastly, **Levy and colleagues** provide valuable insights into training cancer exercise specialists to promote physical activity behaviour change among individuals living with head and neck cancer.

We hope you enjoy this first issue of 2025! If you'd like to be featured in future editions, feel free to contact us at ehp@ehps.net.

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Introducing the new EHPS Executive Committee Members 2024-2026

Please find information about the Executive Committee who will serve the Society from 2024 to 2026. You will find brief biographies of each member, highlighting their professional backgrounds and research interests. Please read through the biographies and learn more about the people who will be representing your interests. We look forward to a productive and collaborative partnership with all our members.

President: David French (UK)

I have been Professor of Health Psychology since 2009, and have worked at the University of Manchester for the past 12 years. My main research interest is in developing and evaluating interventions with reach to promote health and wellbeing. Current projects include: (a) developing and evaluating programmes to assess breast cancer risk in younger women to allow access to prevention and early detection services, (b) assessing how changing the built environment changes behaviour, and (c) assessing the acceptability and implementation barriers to fewer, higher-dose radiotherapy schedules to reduce carbon footprint of medical treatment.

I am delighted to be elected President of EHPS, given that I have been a regular contributor to the EHPS since attending my first conference, in Dublin in 1996. Since then, I have been involved with the EHPS in a number of roles, including being one of the four founding members of the CREATE (Collaborative REsearch And Training in the EHPS) initiative: www.ehps.net/create. I was jointly responsible for organizing the first three annual training workshops adjacent to the EHPS Annual Conference (1999, 2000, 2001), before handing over to new organizers.

My focus over the next two years will be to engage the membership in plans to invest the money that the Society has accumulated, to further the aims of the Society. We are in the happy position of being able to afford to do this, and with an enthusiastic membership who are full of energy to promote health psychology research and practice. I will also aim to support the executive committee to develop their own initiatives to improve the functioning of the Society to meet these aims.

Past President: Wendy Hardeman (Netherlands/UK), she/her

I am Professor of Behavioural Science at the School of Health Sciences, University of East Anglia (UK). I am co-Director of the Norwich Institute of Healthy Ageing, a multi-agency partnership conducting inclusive community-based research to improve health and wellbeing across the lifespan. My research programme focuses on the co-production and evaluation of theory- and evidence-based behaviour change interventions, especially in partnership with communities of high socio-economic disadvantage. For instance, the piloting

and evaluation of creative and social approaches (e.g., making a collage, cooking outside) to engage seldom heard communities in behaviour change research (CHERISH). I co-authored the Behaviour Change Technique Taxonomy v1 and the UK Medical Research Council guidance on process evaluation of complex interventions.

The EHPS has been a continuous and positive presence throughout my academic career. I have met many good friends and future collaborators ever since my first EHPS conference (Florence, 1999). I chaired the Scientific Committee of the EHPS/British Psychological Society Division of Health Psychology 2016 conference in Aberdeen, Scotland. As President-Elect I chaired the EHPS Mentoring Task and Finish Group which developed the EHPS Ari Haukkala Mentoring Programme, which is being rolled out across the membership.

After a two-year term as EHPS President I am delighted to be Past President for the next two years. My priorities are to lead on future conference planning with Easy Conferences and the local organising teams, to support the President and President-Elect in their roles and the Executive Committee in new and ongoing initiatives.

President-Elect: Gozde Ozakinci (UK/ Turkey)

I have received my BA in Psychology at Bogazici University, Istanbul, Turkey, MSc in Health Psychology at University College London, and PhD in Psychology at Rutgers University, USA. My work in health psychology is diverse: I have worked on the psychological aspects of cancer experience from genetic testing for BRCA1/2 mutations to mammography experience to helping people who have had cancer with their fears about cancer coming back. Supporting people with their fears about cancer recurrence is a major focus of my work. In addition, I have been working on community-based physical activity efforts studying the role of social prescribing in health promotion. Lastly, I have been working on the intersection of health and environmental psychology understanding how our health and environmental behaviours can be in conflict and designing messages to support both.

I have been involved with British Psychological Society, Division of Health Psychology-Scotland for over 10 years as a secretary then as the Chair (2020-2022). During this time, I have worked with our committee and also wider Division of Health Psychology committee to ensure that efforts of the members working on broad issues have reached other members, health psychology community, public, and policy makers. Despite my tenure as the Chair coinciding with the initial phases of the COVID-19 pandemic, we were able to work cohesively and effectively. We have organised multiple professional development events led by researchers and practitioners, responding to what the community wanted and needed. I have also established links with a member of the UK parliament again raising the profile of health psychology and its members. I have also been member of the UK Society of Behavioural Medicine and served in their executive committee from 2021 to 2024. I have had two roles: social media officer coordinating our efforts to use X effectively to disseminate information relevant to members and public and, I was the Scientific Chair of the annual scientific meeting committee for the 2023 UKSBM conference in Birmingham. This was the first time we were meeting in person following the pandemic and was very successful in bringing the community together. We have received particularly positive feedback from early career researchers who found a supportive and academically stimulating environment as they embark on their careers.

I serve in the Editorial Board of Health

Psychology Review. I have also been an Associate Editor with Journal Behavioral Medicine and PLOS One in the past. I have also served in scientific advisory committees of several funding bodies.

EHPS is a society that is held very dearly in the hearts of its members having often established their relationship with the society at the early stages of their careers. This is a major strength of the society and I would like to contribute to its continuing success. The training and networking needs of the early career health psychology researchers and practitioners are at the forefront of my mind and efforts. Having had connections with a variety of societies, I would love to see if there are programmes that we could explore in offering more options and opportunities to early career members.

While there have been strong efforts to work closely with policymakers which enhanced the profile and understanding of health psychology, I would love to work with the committee on efforts to increase public's understanding of health psychology and its potential. I believe there are opportunities for health psychologists to have more roles in non-academic settings such as voluntary sector and this might be something that I would hope that EHPS members would work with the committee to enhance career options for health psychologists as well as profile of our profession. In addition, I have always enjoyed participating in our annual scientific meetings and contributing to its success is one of my major goals.

Secretary: Laura König (Austria), she/her

I completed my PhD in Psychology at the University of Konstanz in 2018. Afterwards, I held postdoctoral positions at the Universities of Konstanz and Cambridge and was Junior Professor of Public Health Nutrition at the University of Bayreuth (2020-2023). Since 2023, I am Professor of Health Psychology at the University of Vienna. My research focuses on promoting health and well-being at the population level, e.g. using digital and choice architecture interventions, as well as the study of research participation effects. Amongst others, I am associate editor for Health Psychology Review and editorial board member of Health Psychology and Behavioral Medicine. In 2022, I received the EHPS Stan Maes Early Career Award.

I am passionate about both open science and science communion, which I consider vital aspects of my work. Since 2022, I am one of four editors-in-chief of The Inquisitive Mind Germany, a popular science magazine and blog. I also enjoy passing on my knowledge and skills in these areas to the next generation of researchers. Amongst others, I facilitated the 2023 CREATE workshop (see Bösch and Edgren, 2024, for a report) and currently mentor two groups of early career researchers who are putting their skills into practice in small-scale projects funded by the EHPS-UN committee.

I have been an active member of the EHPS for many years. I was secretary (2015-2017) and chair (2017-2019) of CREATE, co-chair and social media officer of the Digital Health and Computer-tailoring SIG (2019-2023), German national delegate (2018-2023), and Associate Editor for the European Health Psychologist (2020-2022). Together with Val Morrison, I co-chair the Scientific Committee for the 2025 EHPS conference in Groningen.

As EHPS Secretary, I am now responsible for liaising with other academic societies such as the European Federation of Psychologists' Association (EFPA). I furthermore just launched a Task and Finish Group to develop a new communications strategy to improve how EHPS is communicating with its members and beyond. I am also keen to continue existing initiatives and to collect ideas for new initiatives for how to strengthen the voice of

health psychology in practice and policy to ensure that our work has lasting impact.

Treasurer: Michael Kilb (Germany), he/him

I completed my PhD at the Health Psychology Lab of the University of Mannheim (Germany), where I examined the influence of social media on health behaviors, especially eating behavior, and the potential of social media for health behavior interventions. Currently, I am a postdoctoral researcher and project lead at the Institute of Child Nutrition at the Max Rubner-Institut (MRI), Federal Research Institute for Food and Agriculture. Here, my research focuses on food-based dietary guidelines (FBDG) for children and adolescents, both from an international and national perspective. Specifically, we compare available FBDGs in Europe and examine the awareness and practical applicability of the current German FBDG for children and adolescents. Through my work at the MRI, I am also providing policy advice for the German Federal Ministry of Food and Agriculture via writing scientific reports and policy statements and participating in expert discussions. I am also involved in different research projects in the field of child nutrition, covering psychosocial influences on children's and adolescents' eating behavior as well as the early prevention of childhood obesity. Furthermore, I am interested in long-term health behavior change, habit formation, and digital health.

Throughout my research, I worked with experimental methods and intensive longitudinal data (experience sampling and daily diaries), and systematic review methods. In my teaching at the University of Mannheim, I covered the topics of health behavior interventions, obesity etiology, prevention and intervention, and biological foundations of health behaviors, among others. I am also contributing to science communication in health psychology (in my web blog and as a member of the blog team of In-Mind.org).

I joined the EHPS Executive Committee in 2022 in the role of the EHPS Treasurer, in which I am responsible for handling the finances of the Society. I was also part of the Scientific Committee for the 2024 EHPS conference in Cascais/Estoril, Portugal. Currently, my biggest task as a treasurer is coordinating the switch of the EHPS bank accounts to a more sustainable bank. In the Executive Committee, I aim to particularly incorporate the perspective and needs of early career researchers into the decision-making processes of the Society. Before joining the Executive Committee, I experienced the EHPS mainly from the view of a participant. Since the beginning of my PhD, I regularly attended the EHPS conferences, including several CREATE workshops. I love being part of this inspiring society and community, and the annual conferences are truly my academic highlight of the year, both in terms of content and networking with health psychologists from across Europe.

Grants Officer: Angelos Kassianos (Cyprus), he/him

I completed my PhD in Health Psychology at the University of Surrey (UK) in 2014. I am currently a Lecturer in Health Psychology at the Cyprus University of Technology, and the Director of the Behavioral Science in Health - BSiH Lab (www.bsihlab.com). I have previously worked as a researcher in the UK (UCL, University of Cambridge, Imperial College London

etc.) and the US (Harvard Medical School as Fulbright Visiting Scholar in 2015). My research interests include the behavioral science contribution to disease prevention, early diagnosis and the development and evaluation of theoretically informed digital interventions for health behaviour change and collection of patient-reported outcomes.

During the COVID-19 pandemic I have led or co-led several studies to understand the experience of the illness, the contributing factors to self-protective measures and hesitancy to vaccination, including the project COVID-19 IMPACT in which we collected data from more than 10,000 people internationally.

I currently lead or co-lead several research projects funded by European (e.g., EU4Health, Erasmus+) and national grants. At the same time my teaching is focused on mixed research methods, psychometrics and health psychology theories and methods.

I have been a member of EHPS since 2012 and have participated in all conferences since then. I have been an active member of the EHPS-UN Sub-Committee from 2012 to 2017 following my internship at the World Health Organization (WHO). I have been the EHPS National Delegate (ND) of Cyprus since 2015. In this role, I have collaborated with other NDs to set-up a task force commissioned by the EC to examine how health psychology is practiced in EHPS countries and beyond. The results of this work have been presented in roundtables in three EHPS Conferences (2016-2018) and in a Special Issue of the European Health Psychologist in January 2018 where I served as a Guest Co-Editor. I have received the 2018 EHPS Early Career Award and I act as National Editor for the Practical Health Psychology blog. In 2017, I received the Young Transatlantic Innovation Leaders Initiative (YTILI) Fellowship from the US Department of State and in 2020, I received the Young Researcher Award from the Cyprus Research and Innovation Foundation.

My priorities for the next 2 years where I have been re-elected as Grants Officer of the EHPS EC are to (a) contribute to the EC goals, tasks and activities with an emphasis on transparency and inclusion (b) widen the participation of EHPS members on the grant activities; (c) collect feedback on expanding the current grants and tailoring to the needs of the EHPS members and especially the early career members and under-represented groups and (d) support the work and the role of the Special Interest Groups (SIGs) with an emphasis to extend their impact, visibility and activities. Also, milestones like the health crises, advances in chronic conditions' longevity and climate change, bring major challenges and I believe that we need to be collectively responding. Our role needs to be expanded considering these challenges at the same time as our methods becoming more robust and transparent.

National Delegates Officer: Radomír Masaryk (Slovakia)

As a 2000 graduate in Psychology from the Faculty of Arts at Comenius University Bratislava, my academic journey and professional career have been marked by a dedication to understanding human behavior and a commitment to improving educational frameworks. My research interests include social psychology and health psychology, with a special focus on applying qualitative methods. Since 2019, I have been serving as Vice-Rector for External Affairs at Comenius University while teaching as an Associate Professor, and since 2023, as a Professor at the Faculty of Social and Economic Affairs, Comenius University Bratislava. This year I became a Chartered Psychologist with the British

Psychological Association.

My involvement with EHPS began at the 2012 annual conference in Prague, and I have not missed one since. I have participated in multiple Create workshops (2012 Prague, 2015 Limassol, 2016 Aberdeen) and Synergy expert meetings (2019 Dubrovnik, 2023 Bremen). In 2020, I was supposed to chair the EHPS conference in Bratislava, which was then rescheduled to 2021 and finally took place in 2022. I also currently serve as Associate Editor for Health Psychology and Behavioral Medicine, one of the official journals of the European Health Psychology Society.

As for my involvement in similar organizations, I am an active member of the International Society of Critical Health Psychology. I chaired the organizing committee for its 2019 biennial conference in Bratislava. I am also a member of the Program Committee for the largest Czech and Slovak conference focusing on qualitative research, titled 'The Qualitative Approach and Methods in Social Science,' chairing its Bratislava edition on a quadrennial basis (2008, 2012, 2016, 2020, 2024).

Generally, I aim to support the tremendous impact of EHPS annual conferences, which have become vital resources for both early-career researchers and those in more advanced stages of their careers. I would like to explore more possibilities for outreach, including media, patient organizations, and medical professionals. Additionally, I consider it extremely important to support EHPS's own publications. In today's landscape of predatory and cloned journals, it is crucial to protect outlets backed by professional expert organizations such as EHPS. I also plan to involve more critical and qualitative researchers in EHPS, as mixed methods and critical approaches could greatly complement the existing body of health psychology expertise.

Specifically, my role will be to coordinate National Delegates. I have big shoes to fill, taking over from Dominika Kwasnicka - I am determined to keep up her legacy of managing this very special group of dedicated people.

Membership Officer: Anne Van Dongen (Netherlands), she/they

Since 2021 I have been an assistant professor at the University of Twente, Enschede, in the Netherlands, at the Department of Psychology, Health, and Technology. Before that I worked as research fellow in York, UK, Sydney, Australia, and Amsterdam, the Netherlands. I currently teach in the Health Psychology master track, and in both bachelor and master tracks of Health Sciences. I have a broad research spectrum focusing on evaluation of complex health interventions, implementation of eHealth, wellbeing during crises, and development of digital interventions to improve resilience and mental health in LGBTQIA+ youth.

I have loved the EHPS since I started attending the conference in 2009. Several of my professional collaborations have started at the conference, and over the years I have developed many friendships. Attending the conference now is a reunion which feels like one of the highlights of my year. I have served on the Synergy board for a total of 7 years, in the roles of secretary, engagement officer, and taking over the chair position in 2019. During my time as chair, Synergy organised the first (and so far, only) online Expert Meeting due to the COVID pandemic, and has started organising yearly Winter Schools in addition to the annual pre-conference Expert Meetings. As (former) chair of Synergy I will have short lines of communication with both the Synergy and the CREATE board, as well as the new EMPOWER board, which will help me take the interests of these subcommittees into account. In addition, I was national editor of the Practical

Health Psychology Blog for 6 years, and one of the founding board members of the Task and Finish Group for the EHPS Ari Haukkala Mentoring Scheme. Currently I am an EC member of the Dutch/ Belgian Health Psychology Society (ARPH), and I am therefore in an ideal position to connect the EHPS with the national Health Psychology Society of one of the countries with the largest EHPS member base.

As co-lead of the working group focused on mitigating health disparities within the ARPH, I am passionate about extending this theme into the EHPS, consolidating ongoing initiatives. As a membership officer I hope to make our society even more inclusive, while safeguarding scientific standards. Amidst the turbulent landscape dividing Europe and beyond, I firmly believe in the EHPS's potential to serve as a unifying platform for research, networking, and fostering positivity.

Co-opted Member: Katie Newby (UK), she/her

I am a chartered health psychologist and registered HCPC practitioner psychologist with over 20 years' teaching and research experience. My specific interest is in the development and evaluation of health behaviour change interventions, particularly those applied to sexual and reproductive health. I have expertise in quantitative and qualitative research, systematic reviewing (including meta-analysis), intervention development, and process and outcome evaluation. I am currently a co-investigator for the NIHR-funded Public Health Interventions Responsive Studies Team programme of research (PHIRST Connect; £2.4 million) and joint chief investigator of an NIHR-funded (£1.9 million) RCT to examine the effectiveness of an intervention (Wrapped) aiming to reduce sexually transmitted infections amongst young people. I also lead the Public Health and Applied Behaviour change lab (PHAB Lab) at the University of Hertfordshire, a group aiming to address real-world public health problems through the application of behaviour change research.

To date I have engaged with the EHPS through conference attendance (my first being Kos 2003, and committee membership (two terms as secretary, 2019-2023) for EHPS Specialist Interest Group (SIG) on Digital Health and Computer Tailoring. I am also a full member of the British Psychological Society (BPS), the Division of Health Psychology (DHP), and the UK Society for Behavioural Medicine (UKSMB).

I contribute to the development of my profession through positions on editorial boards (e.g. Frontiers in Digital Health) and funding committees (e.g. World Health Organization (WHO) Sexual and Reproductive Health Research Project Review Panel (RP2), Welsh Integrated Funding Scheme), through invited national/international presentations, PhD examination, and engagement with the above societies.

I am very much looking forward to my co-opted role with the EHPS Executive Committee. I have a broad range of interests and skills which I will bring to this. I have particular interests in; research integrity (e.g. I sit on the University of Hertfordshire ethics committee, have developed guidance on assessing and mitigating research harms/risks, and have instigated a process improvement for greater transparency and monitoring of research data); Equality, Diversity and Inclusion (e.g. within PHAB Lab I have set up a programme of annual work experience placements for school students who are typically under-represented in higher education and the psychology workforce); mentoring and researcher development (e.g. I have formally and informally mentored 15+ researchers to enter research careers and achieve promotion). My focus over the next

two years will be on developing the role of the EHPS in the United Nations. I hope to reinvigorate activity in this area, identifying opportunities for members to impact on the work of the UN, particularly around the achievement of Sustainable Development Goals.

References

Bösch, V., & Edgren, R. (2024). Reflections from the 2023 CREATE Workshop. *European Health Psychologist, 23*(3). https://doi.org/10.62696/ehp.v23i3.3461

Report

Transitioning from PhD to Career Researchers – Introducing the EMPOWER network

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Completing a PhD in health psychology and related disciplines is a monumental yet rewarding achievement, opening doors to diverse career opportunities in academia, industry, and government (Madan, 2024). But, for those who choose to remain in research, the journey is far from straightforward. Post-doctoral and early-to-mid-career researchers frequently encounter intense demands, with universities increasingly favouring temporary or short-term contracts over permanent, tenure-track positions (American Association of University Professors, 2022; Kimber, 2003). This trend has led to a highly competitive environment for securing long-term academic roles (Roy et al., 2024), with many researchers now spending longer than ever in early career and post-doctoral roles (Jadavji et al., 2016; Rahal et al., 2023; Van Benthem et al., 2020). Indeed, the average time as a post-doctoral researcher has been cited as high as 4-8 years (Van Benthem et al., 2020), although with notable variation between countries and scientific fields. As a result, it is commonplace for post-doctoral researchers and those in junior positions to find themselves in a precarious 'in-between' stage, feeling neither like students nor fully established researchers (Morris, 2021). This uncertainty about achieving a stable, long-term research career can be daunting. The combination of potentially high workloads, financial stress, and the fluid nature of early research careers has contributed to widespread reports of poor mental wellbeing, disillusionment, and confusion among post-PhD researchers (Share & Loxley, 2023; Van Benthem et al., 2020; van der Weijden & Teelken, 2023).

These findings may paint a concerning picture of the early post-PhD journey. Yet, most post-doctoral researchers and early career academics still report a deep enjoyment and passion for their work (Share & Loxley, 2023), and the vast majority remain committed to pursuing a research or academic career (van der Weijden et al., 2016). This combination of passion and vulnerability highlights the need to address the challenges faced by those embarking on research careers and raises an important question: how can we support these individuals in nurturing their passion and advancing their research while minimizing the negative impacts of early-career academic life?

In this regard, there are a myriad of factors research has shown to protect early-to-mid career researchers and academics mental health and encourage their best work. Unfortunately, however, many of these are out of reach for the average researcher, such as higher salaries, more job stability, and better recognition within institutions (Share & Loxley, 2023; Van Benthem et al., 2020; van der Weijden & Teelken, 2023). Addressing these issues requires a deeper cultural shift, as

recommended by researchers and interest groups worldwide (American Association of University Professors, 2022; Jadavji et al., 2016; Kimber, 2003; Van Benthem et al., 2020). However, in terms of immediate support, research has also shown that even simple steps can significantly nurture good quality work and foster happier, healthier researchers.

Overall, the simplest strategies for supporting early-to-mid career researchers revolve around two key themes: belonging and growth. That is, when researchers feel a sense of belonging within the research community (Morris, 2021; Share & Loxley, 2023), have opportunities to share their experiences with peers (Panayidou & Priest, 2021; Wisker et al., 2007), and receive support in their transition to senior research roles, they are more likely to thrive. It is here that we would like to introduce EMPOWER, which stands for the European network for post-doctoral early career and Mid-career researchers in health PsychOlogy focusing on Well-being and Empowerment of Researchers, the newest of the European Health Psychology Society's networks. The foundations of EMPOWER came to be at EHPS 2023 in Bremen, Germany, where a group of like-minded post-PhD researchers recognized that they shared similar experiences and challenges. They expressed a desire for a support group tailored to their needs. While the EHPS community already includes two networks, CREATE and Synergy, conversations with the committee members of these networks revealed a gap that EMPOWER aims to address—specifically focusing on the well-being and empowerment of post-doctoral early career and mid-career researchers in health psychology. On the final day of the EHPS 2023 conference, in a small café in Bremen, the idea for this new group was formed. Following discussions on goals and format, and after several meetings, the creation of EMPOWER was approved by the EHPS Executive Committee in early 2024 to launch in Cascais at the EHPS 2024 conference.

The overarching purpose of EMPOWER is to help early-to-mid career health psychology researchers to achieve their best in research while also protecting their health and happiness as they develop through their career. Through EMPOWER, our mission is to provide a space where early-to-mid career researchers can meet, network, and share experiences, and where successful academics within EHPS can share their experiences and skills with up-and-coming researchers in an open, collaborative space. After launching at the EHPS 2024 conference, we will be working with early-to-mid career researchers in EHPS to share ideas and discuss the common needs of our community, before launching into a series of online and in-person events covering networking, skills development, and supporting each other. If you are interested in joining EMPOWER or finding out more, you can get all the relevant information at https://ehps.net/about-empower/.

References

American Association of University Professors. (2022). *2022 AAUP Tenure Survey*. American Association of University Professors. https://www.aaup.org/reports-publications/aaup-policies-reports

Jadavji, N., Adi, M., Corkery, T., Inoue, J., & Van Benthem, K. (2016). *The 2016 Canadian national postdoctoral survey report*. Available at: Www. Caps-Acsp. ca/Wp-Content/Uploads/2016/11/2016_CAPS-ACSP-National_Postdoc_Survey_Report. Pdf.

Kimber, M. (2003). The Tenured "Core" and the Tenuous "Periphery": The casualisation of academic work in Australian universities. *Journal of Higher Education Policy and Management, 25*(1), 41–50. https://doi.org/10.1080/13600800305738

Madan, C. R. (2024). "What will you do after?": Lessons from Academia and the World Beyond.

Quarterly Journal of Experimental Psychology, 17470218241236144. https://doi.org/10.1177/17470218241236144

Morris, C. (2021). "Peering through the window looking in": Postgraduate experiences of non-belonging and belonging in relation to mental health and wellbeing. *Studies in Graduate and Postdoctoral Education, 12*(1), 131–144. https://doi.org/10.1108/SGPE-07-2020-0055

Panayidou, F., & Priest, B. (2021). Enhancing postgraduate researcher wellbeing through support groups. *Studies in Graduate and Postdoctoral Education, 12*(1), 42–57. https://doi.org/10.1108/SGPE-06-2020-0038

Rahal, R.-M., Fiedler, S., Adetula, A., Berntsson, R. P.-A., Dirnagl, U., Feld, G. B., Fiebach, C. J., Himi, S. A., Horner, A. J., Lonsdorf, T. B., Schönbrodt, F., Silan, M. A. A., Wenzler, M., & Azevedo, F. (2023). Quality research needs good working conditions. *Nature Human Behaviour, 7*(2), 164–167. https://doi.org/10.1038/s41562-022-01508-2

Roy, S., Velasco, B., & Edwards, M. A. (2024). Competition for engineering tenure-track faculty positions in the United States. *PNAS Nexus, 3*(5), pgae169. https://doi.org/10.1093/pnasnexus/pgae169

Share, M., & Loxley, A. (2023). Invisible and uncertain: Postdoctoral researcher careers in Irish universities. *Irish Educational Studies*, 1–17. https://doi.org/10.1080/03323315.2023.2222735

Van Benthem, K., Nadim Adi, M., Corkery, C. T., Inoue, J., & Jadavji, N. M. (2020). The changing postdoc and key predictors of satisfaction with professional training. *Studies in Graduate and Postdoctoral Education, 11*(1), 123–142. https://doi.org/10.1108/SGPE-06-2019-0055

van der Weijden, I., & Teelken, C. (2023). Precarious careers: Postdoctoral researchers and wellbeing at work. *Studies in Higher Education, 48*(10), 1595–1607. https://doi.org/10.1080/03075079.2023.2253833

van der Weijden, I., Teelken, C., de Boer, M., & Drost, M. (2016). Career satisfaction of postdoctoral researchers in relation to their expectations for the future. *Higher Education, 72*(1), 25–40. https://doi.org/10.1007/s10734-015-9936-0

Wisker, G., Robinson, G., & Shacham, M. (2007). Postgraduate research success: Communities of practice involving cohorts, guardian supervisors and online communities. *Innovations in Education and Teaching International, 44*(3), 301–320. https://doi.org/10.1080/14703290701486720

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Original Article

Open Science and my Research Journey

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I started my undergraduate degree in Psychology in 2016 at the University of Essex. Staying on for four more years to do a Master's and PhD was not in my original plans at all. But something – perhaps my innate curiosity, my insatiable thirst for learning, my love for all things challenging and unanswered, my need to do something more, something with meaning and significance – led me, perhaps rather inevitably, here.

This realisation was primarily shaped by all the different research placement I did during my undergraduate years, ranging from developmental placements, to projects on social psychology and judgement and decision-making. One of these also paved the way for my undergraduate dissertation project on the effect of perceptual disfluency on cognitive reflection, which I manged to publish with my supervisor, Professor Miroslav Sirota (Sirota et al., 2021), and for which I also won the prize for the best undergraduate dissertation.

It was during my undergraduate years that I also started to learn about open science. Given the recent publication crisis in Psychology, there was a shift towards learning and adopting more open and transparent research practices, and this was how the Open Science Working Group in my department was formed, where I have been a member for the past six years. This enabled me to significantly expand my knowledge and develop my skills by attending various workshops and seminars on open science, including on pre-registration, reproducible code, transparent visualization, preparing a Registered Report, using OSF and GitHub, as well as attending various discussion meetings focusing on ways forward for teaching and implementing open science practices in the department and the wider university. At that time, I also became a member of the global Psychological Science Accelerator network aiming to accelerate the accumulation of rigorous knowledge in psychological science while conducting open and transparent research.

During my studies, I also learned a lot about open science from my academic mentor, Professor Miroslav Sirota, who was one of the main proponents of open science in my university, regularly applying open science practices in his own research, and who was also the open science facilitator in my department; he always stressed to me the importance of using open science practices and he encouraged me from the start to learn more and apply them in my own research – and I think this also proves how important and instrumental it can be to have academic mentors and colleagues who are familiar with open science practices and are willing to help others.

Going into the final year of my undergraduate degree, I already knew at that point that I wanted to do postgraduate studies. I applied for funding with my supervisor, and I was awarded a 4-year ESRC (SeNSS) fully-funded studentship for Master's and PhD, which, of course, shaped everything.

I graduated in 2019 with my BSc degree having achieved the highest year mark and highest overall degree mark and was awarded the British Psychological Society Undergraduate Prize, while I

finished my Master's in Research Methods in Psychology in 2020, having been awarded the prize for the best MSc dissertation on the effect of cognitive processing on antibiotic expectations. My PhD research was on medical decision-making, and specifically, on testing a computational psychological theory to better understand the drivers behind people's inappropriate antibiotic expectations. I had always been interested in anything medical and health-related, so deciding on a topic that managed to combine behavioural science with health research, as well as having considerable potential for impact, was very important to me.

During my MSc and PhD degrees, open science continued to be an indispensable part of my research journey; I pre-registered my Master's Dissertation study, as well as all the studies of my PhD using the AsPredicted pre-registration protocol and site; I conducted power analysis for all my studies using either GPower or running power simulations in R; I used the open-source software R for all my research analyses; I prepared and shared all my data, materials, and code on OSF; and I also prepared and submitted a Stage 1 Registered Report, which is currently under review.

During that time, I also had the chance to get involved in several other projects, including the Psychological Science Accelerator's Rapid-Response COVID-19 Project (PSACR) on the psychological and behavioural aspects of the COVID-19 crisis (Dorison et al., 2022; Legate et al., 2022; Wang et al., 2021), and the Many Labs Replication Project on the effect of competition on moral behaviour (Huber et al., 2023), all of which were multi-site, multinational, and open studies, which further enhanced my open science skills

During my PhD years, I also did everything I could to improve my own skills and grow as a researcher, including completing various research and statistical courses, getting involved in different projects, and attending academic conferences and workshops to present my work. During the EHPS 2022 annual conference that I attended with my supervisor, we also formed the ABC Antimicrobials: Behaviour & Cognition Network with other researchers with a joint vision to tackle antimicrobial resistance through behavioural science and open research. Since then, we have organised two annual workshops, and we recently published a commentary on Nature Human Behaviour for the growing threat of antibiotic resistance (Sirota et al., 2023).

My research and open science skills were further developed through a part-time research assistant job during my PhD on open science on the Horizon 2020 grant "YUFERING: YUFE Transforming Research and Innovation through Europe-wide Knowledge Transfer." This allowed me to gain a much more thorough understanding of open science, as well as learn new research skills, such as conducting behavioural analysis on open science practices using the COM-B model, designing the open science survey to identify the barriers and challenges for implementing open science practices at the researcher and institutional level, and reviewing the open science policies and mandates of all the YUFERING partner institutions.

In the final year of my PhD, I also did a three-month UKRI research government internship with the UK Health Security Agency as I wanted to explore how research is conducted in different settings. The internship helped me grow both as a person and as a researcher, and I had the chance to be involved in some very exciting projects, ranging from working on the Pandemic Diseases Capability Board project in partnership with the Department of Health and Social Care, to a qualitative College of Policing project on the impact of repeat assault on police officers, and to a TARGET antibiotics workshop project. This enabled me to learn new skills, such as qualitative data analysis using the NVivo software, and I also co-authored the qualitative research paper for publication (Davidson et al., 2023). I was also able to share with my internship team and wider department

various open science online resources as they all wanted to learn more and start implementing open science practices in their own research. More importantly, the internship clarified for me that I'm much more suited to an academic career, which was both liberating and instrumental in a way – and I would encourage any early career researcher who is unsure about which route to follow to try out some different opportunities if given the chance to do so before committing.

I completed my PhD this year and I have since started working as a post-doctoral research fellow at the Essex ESNEFT Psychological Research Unit for Behaviour, Health and Wellbeing (EEPRU) at the University of Essex with Professor Sheina Orbell. Given my research interests, I'm very excited to have the chance to work for the next three years on health-related research, learn new skills, and further develop my research agenda, while continuing to engage in open science practices. I'm especially looking forward to conducting research in the areas of health communication and misinformation, antibiotic resistance, and habits. At the same time, I'm now in the process of trying to publish my PhD research findings.

As demonstrated, open science has been – and continues to be – an integral part of my research career. This award was very important to me as it also served as a recognition of all the effort that I have been putting over the years to become a better researcher – and I think that it was both the breadth and depth of my open science experience that ultimately enabled me to win this prize. Openness, I think, is the only way for science to go forward and for us researchers to get better by shifting the focus on scientific quality, transparency, and integrity – and so I would encourage anyone, especially early career researchers, to start learning and implementing open science practices in their own research.

I want to say a big thank you here to my incredible PhD supervisors, Professor Miroslav Sirota, Dr Jonathan Rolison, and Dr Matteo Lisi. I've been lucky and privileged enough to have only worked with supportive people - and I think that has really made all the difference. I'm very excited to continue my research journey and see where it will take me next.

References

Davidson, L., Dennis, A., Theodoropoulou, A., Carter, H., Amlôt, R., & Hesketh, I. (2023). "I don't want to be a victim again": the impact of repeat assault on police officers. *Frontiers in Psychology, 14*, 1145944. https://doi.org/10.3389/fpsyg.2023.1145944

Dorison, C.A., Lerner, J.S., Heller, B.H., Rothman, A.J., Kawachi, I.I., Wang, K., Rees, V.W., Gill, B.P., Gibbs, N., Ebersole, C.R., Vally, Z., Tajchman, Z., Zsido, A.N., Zrimsek, M., Chen, Z., Ziano, I., Gialitaki, Z., Ceary, C.D., Lin, Y., … Coles, N.A. (2022). In COVID-19 health messaging, loss framing increases anxiety with little-to-no concomitant benefits: Experimental evidence from 84 countries. *Affective science, 3*(3), 577-602. https://doi.org/10.1007/s42761-022-00128-3

Huber, C., Dreber, A., Huber, J., Johannesson, M., Kirchler, M., Weitzel, U., Abellán, M., Adayeva, X., Ay, F.C., Barron, K., Berry, Z., Bönte, W., Brütt, K., Bulutay., M, Campos-Mercade, P., Cardella, E., Claassen, M.A., Cornelissen, G., Dawson, I.G.J., … Holzmeister, F. (2023). Competition and moral behavior: A meta-analysis of forty-five crowd-sourced experimental designs. *Proceedings of the National Academy of Sciences, 120*(23). https://doi.org/10.1073/pnas.2215572120

Legate, N., Ngyuen, T. V., Weinstein, N., Moller, A., Legault, L., Vally, Z., Tajchman, Z., Zsido, A.N., Zrimsek, M., Chen, Z., Ziano, I., Gialitaki, Z., Ceary, C.D., Jang, Y., Lin, Y., Kunisato, Y., Yamada, Y., Xiao, Q., Jiang, X., … Ogbonnaya, C. E. (2022). A global experiment on motivating

social distancing during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences, 119*(22). https://doi.org/10.1073/pnas.2111091119

Sirota, M., Habersaat, K.B., Betsch, C., Bonga, D.L., Borek, A., Buckel, A., Butler, R., Byrne-Davis, L., Caudell, M., Charani, E., Geiger, M., Gross, M., Hart, J., Kostopoulou, O., Krockow, E.M., Likki, T., Wong, D.L.F., Santana, A.P., Sievert, E.D.C., … Böhm, R. (2024). We must harness the power of social and behavioural science against the growing pandemic of antimicrobial resistance. *Nature Human Behaviour, 8*(1), 11-13. https://doi.org/10.1038/s41562-023-01762-y

Sirota, M., Theodoropoulou, A., & Juanchich, M. (2020). Disfluent fonts do not help people to solve math and non-math problems regardless of their numeracy. *Thinking & Reasoning, 27*(1), 142-159. https://doi.org/10.1080/13546783.2020.1759689

Wang, K., Goldenberg, A., Dorison, C.A., Miller, J.K., Uusberg, A., Lerner, J.S., Gross, J.J., Agesin, B.B., Bernardo, M., Campos, O., Eudave, L., Grzech, K., Ozery, D.H., Jackson, E.A., Garcia, E.O.L., Drexler, S.M., Jurkovi , A.P., Rana, K., Wilson, J.P., … Moshontz, H. (2021). A multi-country test of brief reappraisal interventions on emotions during the COVID-19 pandemic. *Nature Human Behaviour, 5*, 1089–1110. https://doi.org/10.1038/s41562-021-01173-x

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Original Article

Formal, dynamical systems modelling to advance health psychology theories: Interdisciplinary working where psychology meets mathematics

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Background

We health psychologists spend much of our time building, testing and refining theories because they are powerful tools for predicting, understanding and influencing empirical phenomena of interest (e.g., habit formation, behaviour change initiation and maintenance). However, many dominant health psychology theories have mostly been developed under a 'low-resolution measurement paradigm' (e.g., questionnaires administered several weeks or months apart) and therefore tend to incorporate time in a coarse way (Chevance et al., 2021; Scholz, 2019). For example, according to the Transtheoretical (Stages of Change) Model, the behaviour change process for a given individual, from initiation to maintenance, is made up of discrete motivational and behavioural phases (e.g., precontemplation, contemplation, etc), with each phase lasting up to several months. Although the Stages of Change Model has been critiqued for several reasons (West, 2005), recent observations from Ecological Momentary Assessments in people's daily lives fundamentally question its temporal propositions, with many studies finding large within-person fluctuations in stress, affect, motivation and health behaviours over time (Chevance et al., 2021). The same critique applies to many other popular health psychology theories.

In addition, most health psychology theories are ambiguously described and require several additional assumptions about, for example, appropriate measures and study designs, to be specified in order to generate testable hypotheses (Eronen & Bringmann, 2021; Guest & Martin, 2021; Oberauer & Lewandowsky, 2019). As an example, the Control Theory (also known as the Self-Regulation Theory) proposes that behaviour change occurs as the result of a feedback loop. The person sets a goal, monitors (or allows someone else to monitor) their behaviour in relation to the desired goal state and subsequently shifts their behaviour or adjusts their goal based on the detected goal-behaviour discrepancy (Carver & Scheier, 1982). However, the Control Theory is not very precise about how rapidly this process plays out over time and within individuals, or how to measure the different constructs.

Taken together, we and others have argued that the abovementioned issues stifle progress within our field, as they hinder the adjudication between competing theoretical explanations and the development of potent interventions which take time into account (Perski et al., 2023).

A way forward

A potential solution to the abovementioned issues is to use 'formal modelling' to make our theories more precise (Eronen & Bringmann, 2021; Guest & Martin, 2021). Formal modelling involves translating a theory's structure into a mathematical framework (e.g., a series of equations or logical propositions). The formal

model then acts as the theory's 'empirical interface' and can be directly tested against empirical observations (Guest & Martin, 2021). Typically, the formal model is also translated into a computational model – i.e., computer code using R or python – which enables the system behaviour to be easily simulated and visualised under different conditions. Dynamical systems models are a specific type of mathematical framework that can be used, which have the benefit of accommodating non-linearities and feedback loops, using a single framework to represent many different behavioural patterns. For example, one can easily get increases, decreases or cyclical behaviour in a dynamical systems model, using the same underlying model structure. As dynamical systems can quickly become complex, it can be difficult for the theorist to track the consequences of different theoretical principles. Hence, it is important to implement the formal model in mathematical software or a computer and visualise the system behaviour when developing and refining theories.

Many scientific disciplines, including physics, engineering, biology, neuroscience and public health, have a long tradition of using formal and computational modelling. Recently, health psychologists and engineers have translated the Theory of Planned Behaviour and subsequently the Social Cognitive Theory into formal, dynamical systems models (Martín et al., 2018; Riley et al., 2016). However, our recent scoping review found that efforts to formalise existing, or using formal modelling to develop new, health psychology theories are still few and far between (Perski et al., 2023).

In the next sections, we dig deeper into how we embarked on a joint, interdisciplinary project to develop a formal, dynamical systems model to more precisely predict and explain when and why lapse and relapse occur when people try to stop smoking (project 'COMPLAPSE'; https://www.olgaperski.com/research/complapse). Our project is still ongoing, so rather than presenting the results, our intention here is to begin to open up the 'black box' of formal and computational modelling practices, which are typically not well-described in the literature. Although there are many important aspects worth highlighting – notably the participatory involvement of different stakeholder groups – we focus here on the interdisciplinary collaboration between health psychologists and modellers in our project, including where points of tension may arise during the collaborative modelling process. We aim to develop more in-depth tutorials targeting health psychologists in future writings.

Developing a formal model and the need for interdisciplinary collaboration

Since different scientific disciplines have developed formal and computational models, they each take slightly different approaches to their development. For example, useful guiding frameworks have been developed within engineering, neuroscience and public health (Hammond, 2015; Ljung & Glad, 1994; Wilson & Collins, 2019). However, the goal of the modelling typically differs between disciplines and projects. For example, formal modelling is sometimes used to improve the shared understanding of a problem space or to predict, rather than causally explain, events of interest. It is useful to be aware of these different modelling goals when approaching potential collaborators to ensure goal alignment. Given our goal of theory development/refinement in project COMPLAPSE, after searching the literature, we landed on using a recent guiding framework which was generated specifically for the construction of explanatory psychological theories. The Theory Construction Methodology (Borsboom et al., 2021) suggests five broad methodological steps for theorists, including: i) the identification

of relevant phenomena which the theory seeks to explain; ii) the formulation of a 'prototheory' which causally explains how the phenomena are produced; iii) the translation of the phenomena and prototheory into a formal and computational model; iv) the checking of the formal model's explanatory adequacy, including if it can produce the phenomena of interest in computer simulations; and v) the assessment of the theory's overall 'goodness', including its coherence, plausibility and predictive power.

In addition to drawing on the Theory Construction Methodology, we took a participatory approach in our project, conducting interviews with stakeholders to elicit their mental models of when and why smoking lapses occur during a quit attempt. We summarised the findings in a conceptual map, which was subsequently translated into a series of equations implemented in R. Rather than working with off-the-shelf equations or statistical software packages, formal and computational models tend to be bespoke. Therefore, for health psychologists, developing formal models typically requires collaboration with applied mathematicians. OP and JA met at the inaugural EHPS Winter School in Leuven and identified a shared interest in formal and computational modelling to advance health psychology theories. OP has a background in health psychology/addiction research and has prior experience of applying complex analytical techniques (e.g., multilevel modelling, machine learning) to intensive, longitudinal data and writing R code. JA has a background in dynamic models of social processes across a range of systems. We then initiated a collaboration, which, in our project, required frequent discussion to combine our knowledge of health psychology, addiction and mathematics in general and dynamical systems and computational modelling in particular.

As an example of how our discussions would pan out, OP would describe key explanatory principles identified in the literature and as part of the stakeholder interviews and JA would use his experience of standard modelling frameworks and motifs (e.g., a decaying stimulus) and suggest ways in which the explanatory principles could be represented mathematically. As when designing an experiment, many choices must be made in a formal model (e.g., Are decisions made every minute or every hour? Does self-efficacy increase to infinity or is there a maximum value it can reach?). Dynamical systems models often follow some kind of standard framework, tweaked for the purpose in hand. For example, paradigmatic models exist for decision making in terms of utility maximisation, learning, or strategic decisions in the form of game theory. Therefore, one way in which collaboration can be effective between applied mathematicians and health psychologists is to understand standard frameworks that may also apply to the questions at hand. This has been referred to as 'analogical abduction' in the Theory Construction Methodology (Borsboom et al., 2021). We then progressed with OP writing the equations and computer code, simulating the system behaviour for different parameter values and bringing questions back to JA if needed.

To concretise this even more, below is an example of how we formalised exposure to cigarette cues which have, through repetition, become automatically associated with the anticipation of the reward from smoking, and how such exposure contributes to the subjective experience of wanting to smoke (i.e., cravings). We theorised that the reactivity to a given cue lingers for a bit and declines exponentially over time. As such, we formalise cue reactivity (CR) based on a standard motif of a decaying stimulus as:

$$CR(t) = \delta_1 CR(t-1) + \delta_2 CC(t)$$

where δ_1 is a decay parameter and δ_2 represents the impact of a recent cigarette cue (CC), which could vary between individuals, as we expect

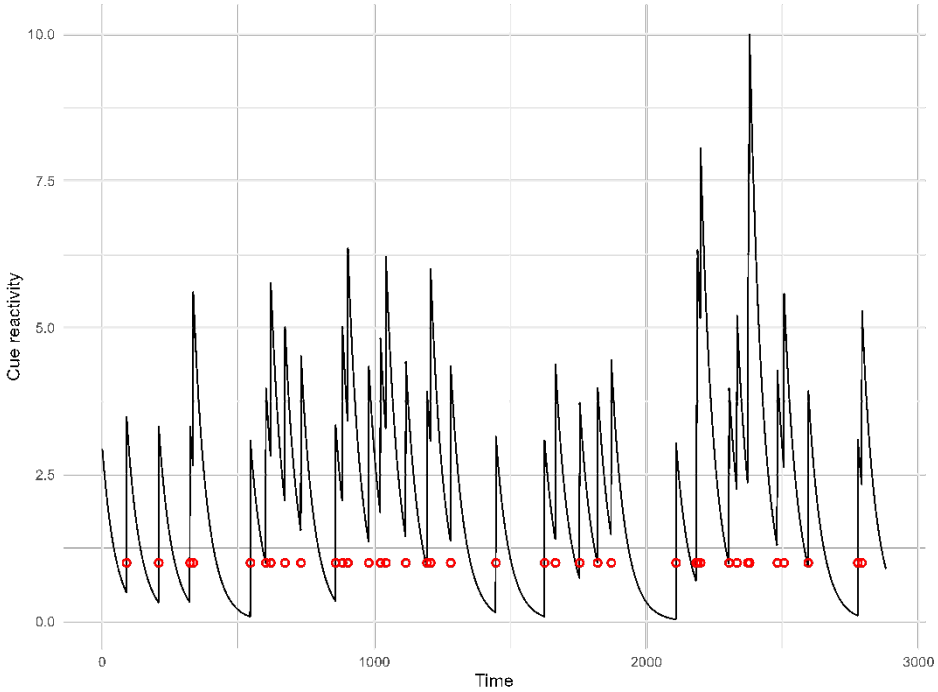

Figure 1. Cue reactivity on the y-axis (0 to 10), with time since the quit attempt started on the x-axis (5-minute intervals). The red dots represent exposure to a cigarette cue.

responses to cues to vary within the population. We then simulated what this may look like for a given individual, assuming that δ_1= 0.98 and δ_2= 3 (see Figure 1).

Tips and tricks for interdisciplinary working to formalise health psychology theories

In our experience, the following might be helpful when collaboratively formalising health psychology theories. First, since there is little guidance for health psychologists interested in formal modelling, it can be difficult to know where to start. Those with modelling expertise rarely document the many choices made during the model development process. However, for those new to modelling, it is difficult to learn without seeing explicit examples of the process. As concluded in our recent scoping review, we encourage researchers interested in using these methods to adopt open science practices to share as much as possible about the development process, including code and other materials (Perski et al., 2023). In addition to making underlying model goals and assumptions transparent, this has the added benefit of allowing novices to draw on available examples to better understand what a formal and computational model looks like and what constitutes 'good practice' in regard to the modelling goal.

Second, it is not always easy to know where to meet future collaborators with relevant skills and modelling interests. Not all modellers are interested in the development of explanatory psychological theories and many applied models do not generate enough mathematics or computer science to contribute novel findings to those fields. From JA's experience, there is often a desire in the mathematical community to collaborate on important empirical topics. However, mathematicians often do not know where to meet researchers with specific subject knowledge and interest in formal modelling. Therefore, it may be

useful for those in the modelling community who are already working with health psychologists to begin to make more introductions between colleagues, and for conferences such as the EHPS annual conference to make clear that new methodological approaches are welcome.

Third, a key factor in any of these collaborations is that formal modelling takes time, particularly when initiating a new collaboration. Not only are the languages and assumptions used by health psychologists and modellers very different (e.g., modellers are often quick to abstract away most of a phenomenon in order to easily formalise it, whereas domain experts are often tied to the intricacies of any experience), but formal modelling requires multiple iterations. This can come as a surprise to researchers more familiar with the application of statistical models to empirical data. In addition, for health psychologists without much prior modelling and coding experience, it is important to factor in ample time for skills development.

Conclusion

Here, we introduced the need for the formalisation of health psychology theories to improve their precision and the importance of interdisciplinary working between health psychologists and mathematicians. Tips and tricks for how to work together across disciplines, based on our experience of working together as part of project 'COMPLAPSE' were provided. It remains to be explored whether the increased use of formal and computational modelling within health psychology will accelerate theoretical advancements and practical applications.

References

Borsboom, D., van der Maas, H. L. J., Dalege, J., Kievit, R. A., & Haig, B. D. (2021). Theory Construction Methodology: A Practical Framework for Building Theories in Psychology. *Perspectives on Psychological Science, 16*(4), 756–766. https://doi.org/10.1177/1745691620969647

Carver, C. S., & Scheier, M. F. (1982). Control Theory: A Useful Conceptual Framework for Personality-Social, Clinical, and Health Psychology. *Psychological Bulletin, 92*(1), 111–135. https://psycnet.apa.org/doi/0.1037/0033-2909.92.1.111

Chevance, G., Perski, O., & Hekler, E. B. (2021). Innovative methods for observing and changing complex health behaviors: Four propositions. *Translational Behavioral Medicine, 11*(2), 676–685. https://doi.org/10.1093/tbm/ibaa026

Eronen, M. I., & Bringmann, L. F. (2021). The Theory Crisis in Psychology: How to Move Forward. *Perspectives on Psychological Science, 16*(4), 779–788. https://doi.org/10.1177/1745691620970586

Guest, O., & Martin, A. E. (2021). How Computational Modeling Can Force Theory Building in Psychological Science. *Perspectives on Psychological Science, 16*(4), 789–802. https://doi.org/10.1177/1745691620970585

Hammond, R. A. (2015). Considerations and Best Practices in Agent-Based Modeling to Inform Policy. In Assessing the Use of Agent-Based Models for Tobacco Regulation. *National Academies Press* (US). https://www.ncbi.nlm.nih.gov/books/NBK305917/

Ljung, L., & Glad, T. (1994). *Modeling of Dynamic Systems* (1st edition). Pearson College Div.

Martín, C. A., Rivera, D. E., Hekler, E. B., Riley, W. T., Buman, M. P., Adams, M. A., & Magann, A. B. (2018). Development of a Control-Oriented Model of Social Cognitive Theory for Optimized mHealth Behavioral Interventions. *IEEE Transactions on Control Systems Technology,*

28(2), 331–346. IEEE Transactions on Control Systems Technology. https://doi.org/10.1109/TCST.2018.2873538

Oberauer, K., & Lewandowsky, S. (2019). Addressing the theory crisis in psychology. *Psychonomic Bulletin & Review, 26*(5), 1596–1618. https://doi.org/10.3758/s13423-019-01645-2

Perski, O., Copeland, A., Allen, J., Pavel, M., Rivera, D. E., Hekler, E., Hankonen, N., & Chevance, G. (2023). The iterative development and refinement of health psychology theories through formal, dynamical systems modelling: A scoping review and initial 'best practice' recommendations. *OSF Preprints*. https://doi.org/10.31219/osf.io/bpcgu

Riley, W. T., Martin, C. A., Rivera, D. E., Hekler, E. B., Adams, M. A., Buman, M. P., Pavel, M., & King, A. C. (2016). Development of a dynamic computational model of social cognitive theory. *Translational Behavioral Medicine, 6*, 483–495. https://doi.org/10.1007/s13142-015-0356-6

Scholz, U. (2019). It's Time to Think about Time in Health Psychology. *Applied Psychology: Health and Well-Being*. https://doi.org/10.1111/aphw.12156

West, R. (2005). Time for a change: Putting the Transtheoretical (Stages of Change) Model to rest. *Addiction,* 1036–1039. https://doi.org/10.1111/j.1360-0443.2005.01139.x

Wilson, R. C., & Collins, A. G. (2019). Ten simple rules for the computational modeling of behavioral data. *eLife, 8*, e49547. https://doi.org/10.7554/eLife.49547

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Original Article

Training Cancer Exercise Specialists in Patient-Centred Motivational Communication to Support Physical Activity Behaviour Change for People Living with Head and Neck Cancer

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Head and neck cancer encompasses a diverse range of malignancies affecting structures such as the larynx, oropharynx, oral cavity, nasopharynx, nose, and paranasal sinuses (Bhat et al., 2021). In the United Kingdom over 12,000 new cases of head and neck cancer are diagnosed annually (CRUK, 2023). Curative treatment for head and neck cancer typically involves surgery, radiotherapy, and chemotherapy, as singular or multi-modality treatments depending on the site and stage of the disease (Cramer et al., 2019). Both the disease and its treatment have short-term and chronic side-effects, such as difficulties swallowing, speaking, breathing, pain, fatigue, and alterations to appearance. These issues are associated with considerable negative psychosocial impact and poor quality of life (Doughty et al., 2023).

Low levels of physical activity among head and neck cancer patients can exacerbate treatment-related complications and further reduce their overall quality of life. Midgley and colleagues (2023a) found that two thirds of head and neck cancer survivors were insufficiently physically active to gain appreciable health benefits. Moreover, physical inactivity can lead to muscle wasting, decreased cardiovascular fitness, and impaired functional capacity (Platek et al., 2017), making it challenging for patients to regain strength and resume normal activities after treatment. Symptoms specific to the condition, such as dry mouth, difficulty swallowing, shoulder weakness and pain, and mouth drainage can hinder physical activity engagement among individuals with head and neck cancer (Midgley et al., 2018). Within the United Kingdom, physical activity is not part of the standard head and neck cancer treatment pathway and, therefore, patients have limited access to specialist support to help them safely and effectively engage in physical activity. Consequently, supporting people with head and neck cancer in overcoming barriers to engagement

in physical activity and finding enjoyable and feasible physical activities have the potential to improve health outcomes and quality of life during and after cancer treatment (Doughty et al., 2023).

Cancer exercise specialists are allied health professionals with a vocational qualification in designing and delivering exercise programmes for individuals with cancer. However, like other allied health professionals managing chronic conditions (Whittaker et al., 2022), cancer exercise specialists do not receive specialised training in behaviour change. This knowledge gap, therefore, limits their capacity to integrate behaviour change principles into their professional practice. Health psychologists can collaborate with cancer exercise specialists to promote behaviour change and optimise patients' adherence to exercise programmes. While there are established frameworks available to aid health psychologists educate health professionals on behaviour change interventions (Michie et al., 2014), there is currently no specific guidance tailored to assist health psychologists train cancer exercise specialists on behaviour change knowledge for people living with head and neck cancer. Developing tailored guidance for training cancer exercise specialists in behaviour change would facilitate collaboration with health psychologists, leading to more holistic care for head and neck cancer patients.

The present article aims to assist health psychologists in training cancer exercise specialists to promote behaviour change in physical activity among individuals living with head and neck cancer. Patients undergoing treatment for head and neck cancer frequently encounter physical and emotional challenges that can affect their motivation to engage in exercise (Doughty et al., 2023). We offer insights, therefore, into the design and practical application of behaviour change support in the form of a patient-centred motivational communication training programme, delivered to three cancer exercise specialists. Our training programme equips health psychologists to train cancer exercise specialists on effectively communicating with patients diagnosed with head and neck cancer, therefore aiding the adoption of a physically active lifestyle. In particular, the programme comprises of two workshops, each lasting 2 hours, with 100% attendance by the cancer exercise specialists. Both workshops were structured as interactive seminars and were conducted remotely via Microsoft Teams by the primary author. Additionally, cancer exercise specialists received a handbook containing the key content presented in each workshop. The handbook offered accessible information on understanding, promoting, and applying motivational communication in practice for head and neck cancer patients. Next, we will offer a descriptive overview of each workshop.

Workshop 1

The aim of the first workshop was to help cancer exercise instructors learn about the importance of supportive communication language drawing from self-determination theory (see table 1). Utilising theory is important for designing and tailoring training programmes for behaviour change (Dalgetty et al., 2019). There is now robust evidence supporting the utility of self-determination theory for promoting physical activity engagement (Ntoumanis et al., 2021). Therefore, we used self-determination theory to offer a theoretical framework through which cancer exercise specialists are equipped with fundamental knowledge of motivational mechanisms for changing physical activity behaviour. The self-determination approach posits that humans have three innate psychological needs that, when satisfied, contribute to intrinsic motivation and optimal functioning (Ryan & Deci, 2017). These needs are i) Autonomy: the need to experience a sense of choice, volition, and control over one's

actions and decisions; ii) Competence: the need to feel effective and capable in mastering challenges and achieving desired outcomes; and iii) Relatedness: the need to connect and feel socially connected to others, experiencing a sense of belonging and caring relationships. Findings demonstrate that an autonomy supportive communication style is beneficial for exercisers as it supports their basic psychological needs for autonomy, competence, and relatedness (Ntoumanis et al., 2017). This style can enhance the quality and longevity of exercisers' engagement in physical activities.

Motivational interviewing has emerged as a valuable framework for integrating the principles of self-determination theory into practice, as they both emphasise the importance of intrinsic motivation and creating autonomy-supportive environments to facilitate behaviour change (Deci & Ryan, 2012). Our patient-centred motivational communication training program, therefore, draws from motivational interviewing practice. Specifically, workshop 1 was additionally designed to train cancer exercise specialists on motivational interviewing skills, with specific emphasis on relational skills and content skills (see table 1). Relational skills focus on establishing trust, empathy, and rapport with the patients, forming the foundation for supportive patient-centred motivational communication (Miller & Rollnick, 2013). In contrast, content skills aim to guide conversations and explore ambivalence to elicit change talk to assist individuals in clarifying their motivations, values, and goals. Both the theoretical and practice components of workshop 1, were reinforced using presentation slides, video resources, and discussion-based exercises.

Workshop 2

The aim of the second workshop was to equip cancer exercise specialists with ways to implement content skills through decisional balance discussions, utilising assessment rulers, and encouraging individuals to express their motivations, desires, and commitment to change (see table 1). Using presentation slides, video material, role play and reflective activities the workshop helped the cancer exercise specialists hone their content skills and their relational skills to enable effective motivational communication with head and neck cancer patients.

The motivational interviewing approach provides valuable insights into each individual's unique needs and motivations. These insights can serve as a foundation for selecting appropriate behaviour change techniques that directly target personalised physical activity barriers and challenges. Consequently, our patient-centred motivational communication program incorporates behaviour change techniques within the motivational interviewing framework. Thus, workshop 2 also provided training for cancer exercise specialists to select behaviour change techniques tailored to meet the individual needs of head and neck cancer patients. To identify suitable behaviour change techniques, we used the Coventry, Aberdeen, and London-Refined (CALO-RE; Michie et al., 2011) taxonomy, which offers an evidence-based guide for classifying techniques used to change physical activity behaviour (see table 2). Through group discussion and practical activities, cancer exercise specialists were able to learn about applying behaviour change techniques into practice.

We believe that combining behaviour change techniques within the motivational interviewing approach has several advantages. First, motivational interviewing provides an understanding of the individual's readiness for change and unique circumstances, enabling cancer exercise specialists to select behaviour change techniques that align with the individual's preferences and needs. Personalised approaches of this nature can be more appealing and engaging, leading to better physical activity adherence and

sustained effort (Ghanvatker et al., 2019). Second, the integration of behaviour change techniques ensures that behaviour change strategies are collaboratively selected. As such, the collaborative process can enhance patient ownership of the change efforts, leading to increased commitment to achieve their goals. Finally, behaviour change often involves ambivalence and resistance (Rice et al., 2017), as individuals' grapple with conflicting feelings about changing their behaviour. Given that motivational interviewing is adept at addressing ambivalence, patients may become more open to utilising behaviour change techniques.

In conclusion, there is a lack of guidance for health psychologists to collaborate with cancer exercise specialists on behaviour change related to physical activity. Therefore, this article serves as a commentary aiming to assist health psychologists to support cancer exercise specialists in patient-centred motivational communication, with the goal of promoting exercise participation among individuals living with head and neck cancer. Underpinning the training were two substantive educational-based workshops that were theoretically orientated within the self-determination approach, utilised motivational interviewing skills and applied behaviour change techniques. Further research is required to evaluate the acceptability, feasibility and efficacy for embedding our training programme into the treatment pathway for people with head and neck cancer. In doing so, health psychologists have the potential to transfer behaviour change knowledge to exercise professionals who seek to encourage active lifestyles for people living with head and neck cancer.

References

Bhat, G. R., Hyole, R. G., & Li, J. (2021). Head and neck cancer: Current challenges and future perspectives. *Advances in cancer research*, 152, 67–102. https://doi.org/10.1016/bs.acr.2021.05.002

Cramer, J. D., Burtness, B., Le, Q. T., & Ferris, R. L. (2019). The changing therapeutic landscape of head and neck cancer. *Nature reviews Clinical oncology, 16*(11), 669-683. https://doi.org/10.1038/s41571-019-0227-z

Dalgetty, R., Miller, C. B., & Dombrowski, S. U. (2019). Examining the theory-effectiveness hypothesis: A systematic review of systematic reviews. *British Journal of Health Psychology, 24*(2), 334-356. https://doi.org/10.1111/bjhp.12356

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory in health care and its relations to motivational interviewing: a few comments. *International Journal of Behavioral Nutrition and Physical Activity,* 9:24. https://doi.org/10.1186/1479-5868-9-24

Doughty, H. C., Hill, R. A., Riley, A., Midgley, A. W., Patterson, J. M., Boddy, L. M., Rogers, S.N., Maden, M.M., & Williams, N. H. (2023). Barriers to and facilitators of physical activity in adults living with and beyond cancer, with special emphasis on head and neck cancer: a systematic review of qualitative and mixed methods studies. *Supportive Care in Cancer, 31*(8), 471. https://doi.org/10.1007/s00520-023-07925-x

Ghanvatkar, S., Kankanhalli, A., & Rajan, V. (2019). User models for personalized physical activity interventions: scoping review. *JMIR mHealth and uHealth, 7*(1), e11098. https://doi.org/10.2196/11098

Michie, S., Ashford, S., Sniehotta, F. F., Dombrowski, S. U., Bishop, A., & French, D. P. (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. *Psychology & Health, 26*(11), 1479-1498. https://doi.org/10.1080/08870446.2010.540664

Michie, S., Atkins, L., & West, R. (2014). *The behaviour change wheel*. A guide to designing

interventions. Silverback Publishing.
Midgley, A. W., Lowe, D., Levy, A. R., Mepani, V., & Rogers, S. N. (2018). Exercise program design considerations for head and neck cancer survivors. European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery, 275(1), 169–179. https://doi.org/10.1007/s00405-017-4760-z
Midgley, A. W., Levy, A. R., Cunha, F. A., Key, A., Patterson, J. M., & Rogers, S. N. (2023a). Safety and feasibility of cardiopulmonary exercise testing in head and neck cancer survivors. *Clinical Physiology and Functional Imaging, 43*(3), 170-180. https://doi.org/10.1111/cpf.12807
Midgley, A. W., Levy, A. R., Rogers, S. N., Brooker, R. C., Bryant, V., Cherry, M.G., Lane, S., Nugent, M.M., Price, R., Schache, A.G., Young, B., & Patterson, J. M. (2023b). ACTivity as medicine In Oncology for Head and Neck (ACTIOHN): Protocol for a feasibility study investigating a patient-centred approach to exercise for people with head and neck cancer. *Plos one, 18*(8), e0289911. https://doi.org/10.1371/journal.pone.0289911
Miller, W.R., and Rollnick, S.: (2013). *Motivational Interviewing: Preparing People for Change*, 3rd Edn. New York, NY: Guildford Press.
Ntoumanis, N., Ng, J.Y., Prestwich, A., Quested, E., Hancox, J.E., Thøgersen-Ntoumani, C., Deci, E.L., Ryan, R.M., Lonsdale, C., & Williams, G.C. (2021). A meta-analysis of self-determination theory-informed intervention studies in the health domain: Effects on motivation, health behavior, physical, and psychological health. *Health Psychology Review, 15*(2), 214-244. https://doi.org/10.1080/17437199.2020.1718529
Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of training group exercise class instructors to adopt a motivationally adaptive communication style. *Scandinavian Journal of Medicine & Science in Sports, 27*(9), 1026-1034. https://doi.org/10.1111/sms.12713
Platek, A. J., Cannioto, R. A., Etter, J. L., Kim, J., Joseph, J. M., Gulati, N. R., Schmitt, K.L., Callahan, E., Khachatryan, E., Nagy, R., Minlikeeva, A., Szender, J.B., Singh, A.K., Danziger, I., & Moysich, K. B. (2017). The association of lifetime physical inactivity with head and neck cancer: a hospital-based case–control analysis. *European Archives of Oto-Rhino-Laryngology, 274,* 3773-3780. https://doi:10.1007/s00405-017-4688-3
Rice, S. L., Hagler, K. J., Martinez-Papponi, B. L., Connors, G. J., & Delaney, H. D. (2017). Ambivalence about behavior change: utilizing motivational interviewing network of trainers' perspectives to operationalize the construct. *Addiction Research & Theory, 25*(2), 154-162. https://doi.org/10.1080/16066359.2016.1236191
Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press. https://doi.org/10.1521/978.14625/28806
Whittaker, E. M., Levy, A. R., Matata, B., Kinnafick, F. E., & Midgley, A. W. (2022). Using behavior change interventions in cardiac and pulmonary rehabilitation: Perspectives from healthcare professionals in the United Kingdom. *International Journal of Environmental Research and Public Health, 19*(4), 1980. https://doi.org/10.3390/ijerph19041980

Table 1. Overview of Workshops

Workshop 1	
Objectives	**Topics Covered**
1. Expand CES understanding of exercise motivation for head and neck cancer patients from a SDT perspective.	Intrinsic vs extrinsic motivation and psychological needs status.
1. Explore how motivational styles derived from SDT can support or thwart head and neck cancer patients exercise motivation.	Autonomy supportive vs controlling motivating styles and associated behavioural consequences.
1. Enhance CES communication knowledge by drawing from motivational interviewing skills.	MI skills for promoting autonomy supportive communication. Including relational (e.g., OARS) and content skills (e.g., change talk).
Workshop 2	
1. Support CES to deliver motivational interviewing skills when communicating with head and neck cancer patients.	Implement relational and content skills into patient consultations (e.g., reflection strategies, decisional balance and assessment rulers).
1. Prepare CES to integrate behaviour change techniques into MI conversations with head and neck cancer patients.	Identify and apply behaviour change techniques in an autonomy supportive manner that is in keeping with the MI approach.

Note: CES: Cancer Exercise Specialist; SDT: Self-Determination Theory; OARS: Open Questions, Affirmations, Reflective Listening, Summaries; MI: Motivational Interviewing

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Table 2. Examples of CALO-RE behaviour change techniques with descriptions.

CALO-RE Taxonomy	Description	Example
Goal setting	Collaborative goal setting	Engaging the patient in setting specific, measurable, achievable, relevant, and time-bound goals, aligning with their values and motivations.
Feedback	Providing personalised feedback	Offering feedback on the patient's current physical activity efforts and progress towards their goals, highlighting areas for improvement and celebrating successes.
Barrier Identification	Identifying barriers to physical activity	Exploring and acknowledging barriers or challenges that may hinder the patient's exercise engagement, and strategizing ways to overcome them.
Action planning	Developing an action plan	Assisting the patient in creating detailed plans for implementing and maintaining exercise routines.
Prompt self-monitoring	Encourage tracking of exercise and progress	Suggest keeping an exercise journal or using a fitness app.
Time management	Manage time effectively to incorporate physical activity	Discuss ways to fit exercise into the patient's daily schedule.
Information about consequences	Educate on the benefits of regular exercise	Provide information on how exercise can improve health and well-being.
Demonstrate behaviour	Model physical activity	Showing how to perform physical activity tasks.

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