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Book of Abstracts

Bridging Research and Practice in Fostering Healthy Academic Workplaces

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Researcher Mental Health Observatory

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Mental Health First Aid in Academia: Experiences of setting up a MHFA team at the Friedrich Schiller University in Jena, Germany

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1. Scientific and practitioners' research presentations
    a. Bottom-up and community-driven interventions

Purpose

The mental health of academics at all career stages has become a topic of great concern in recent years, and different institutes of Higher Education have vastly different approaches to supporting their staff and students with their wellbeing. Mental Health First Aid (MHFA) is an accredited and evidence-based structured intervention when a person struggles with their wellbeing and can be implemented in most Higher Education settings in a relatively uncomplicated manner, so long as an accredited national provider of MHFA training is available.

Design

Mental Health First Aid training is offered by nationally accredited institutes and is open to absolutely anybody, much like physical health first aid. There is also the option to designate a certified trainer in your institute and roll out the training in-house

Results (if applicable)

Dr. Hendrik Huthoff from the University of Jena will share his experiences of building a MHFA first aid team at the university, starting from a grass-roots movement of post-graduate program coordinators to the implementation of in-house training. He will share his experiences of being a MH first aider, how this is helpful to anyone in an advisory, counselling or leadership position in higher education as well as discussing some of the most common issues with which the MHFA team are presented.

Implications

MHFA is a proven support mechanism that can be implemented in nearly any professional and private setting and serve as a selective prevention of risk groups by delivering an evidence-based intervention in times of crisis

Acknowledgments

This work is supported by the Carl-Zeiss-Stiftung through its funding of the Jena Alliance of Graduate Schools “Life in Focus” at the Friedrich Schiller University Jena.

Resources

https://www.uni-jena.de/en/mhfa

The development of a Health and Wellbeing strategy in a Dutch University

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Indicate your track:

1. Scientific and practitioners' research presentations
    a. Bottom-up and community-driven interventions
    b. Institutional interventions and policies
    c. Policy-Level insights

Purpose

The purpose of this study is to give an overview of the institutional interventions and policies and their developments at one university in the Netherlands.

Design

In order to identify institutional interventions and policies different representatives from the University were contacted. A number of online conversations and email correspondences were conducted. In addition, desk research was performed. Documents (e.g. reports, strategies) were collected and analysed.

Results

Alliance EUniwell

The university is partner of EUniWell, the European University of Well-Being. This is an alliance of eight universities from different countries established in 2019. The alliance's aim is to promote an inclusive well-being agenda for students, staff, and society at large by offering new, innovative, interdisciplinary, and international opportunities for collaboration and development across education and research. The university is leading the development of a HR well-being policy and is developing joint HR guidelines to support innovative and inclusive staff development programs at three levels.

Caring Universities

Several Dutch Universities, including the one studied in this project, have bundled their resources and set up the platform Caring Universities. Since summer 2021, Caring Universities offers free online programs to improve the mental well-being of PhD candidates. There are 4 programs, developed by clinical psychologists, aimed at improving your mood, reducing stress, dealing with the COVID-19 pandemic and diminish the habit of procrastination. All programs are free of charge and offer online coaching.

Healthy University Programme

Since 2019 the university is an associate member of the UK Healthy Universities Network. This network supports the university to develop and implement whole university approaches to health, wellbeing and sustainability. From 2020 the university have set up their a Healthy University programme to create a positive, healthy working environment where both staff and students can reach their full potential. As well as organizing a range of activities to boost vitality, the healthy university program aims to kickstart a movement that both prioritises health and makes health and vitality an integral part of the university identity. One example is the organization of a Healthy University Week, held every year in October, where staff members can take part in a wide range of healthy activities. In addition, a Healthy University website is created which offers lots of tips for creating a healthy and pleasant work environment.

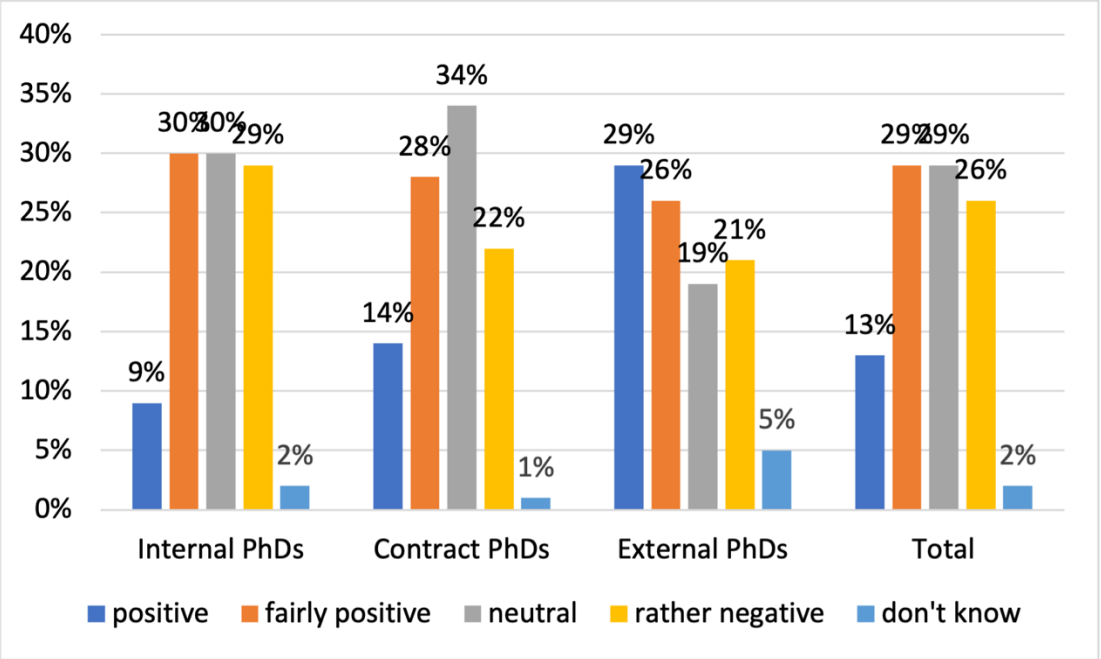
Training courses for Early career Researchers

HR learning and development offers training courses and webinars free of charge for all type of PhD candidates. Examples of webinars are: Burnout First Aid Kit and How work-life balance can bring less stress and more joy in our life. HR learning and development also offers workshops for PhD candidates and postdocs with practical information and tips on how to deal with mental health issues. Examples from 2021 are: ‘how to take care of your mental health’ and ‘how to avoid a burn-out’.

Data collection on mental health and wellbeing of PhD candidates

In order to monitor the mental health of PhD candidates, the university conducted in 2021 a survey study. When asking about the impact of the PhD track on the wellbeing of PhD

candidates we received mixed results (see Figure). 29% of the external PhDs (PhDs who do not in principle receive any funding and write their thesis often alongside their regular work under the supervision of a supervisor from the university) experienced a positive impact. This is a much higher percentage compared to internal employed PhD candidates (9%) and contract PhD candidates (14%; who receive a grant or scholarship in their country of origin which enables them to conduct their PhD research) 14%. In general, 26% of PhD candidates perceived the impact of the PhD trajectory on their wellbeing as negative. The same survey showed that the COVID-19 pandemic has a negative impact on the mental health on the majority (74%) of the PhD candidates.



Implications

The university is currently discussing how to start monitoring the effectiveness of their activities, and how those monitoring results could be used to refine the programme even further.

Small actions can have big impacts: Transforming Mental Health and Wellbeing Policy and Culture

Professor Jane Creaton, University of Portsmouth and Dr Janet Metcalfe, Vitae

Purpose

Large scale cultural and societal change around mental health and wellbeing may sometimes be assumed to be contingent on top down strategy and implementation. The purpose of this session is to explore how piecemeal interventions and actions taken by a number of different actors at institutional and policy level can lead to significant and impactful changes.

Design

The first part of the presentation will outline key policy developments and initiatives which have emerged in the United Kingdom in recent years at the national level. These include: Exploring wellbeing and mental health and associated support services for postgraduate researchers (2018), The Concordat to Support the Career Development of Researchers (2019), Research and Development (R&D) People and Culture Strategy (2021), culminating in a consultation on a New Deal for Postgraduate Research (2022) issued by UK Research and Innovation (UKRI). UKRI is the largest single funder of postgraduate research students in the UK, with between 20-30% of the UK's approximately 100,000 doctoral students supported directly through its research councils. The New Deal includes a commitment to promote and safeguard wellbeing and support a positive research culture.

The second part of the presentation will explore some initiatives to improve postgraduate researcher wellbeing in one UK university. These initiatives included mental health first aid training for academic and professional staff and postgraduate researcher student representatives, training on mental health and wellbeing for supervisors, and development sessions for postgraduate researchers which focussed on developing health working practices. Although some of these initiatives were externally funded by the Office for Students, others built on existing proposals and interventions. They aligned with the call for researcher empowerment in the Researcher Mental Health Observatory's Researcher Mental Health and Wellbeing Manifesto (2021), raising awareness of mental health and wellbeing amongst the

postgraduate researcher community and professionalisation of supervision practices and processes. Through identifying good practice and providing an evidence base for effective interventions, this patchwork of different initiatives was drawn together into an institutional strategy for enhancing the mental health and wellbeing of postgraduate researchers. In this institutional context, this bottom up development and implementation of strategy proved to be an effective mechanism for consolidating and effecting change and gaining senior institutional buy-in.

Results

In the final part of the presentation, we will explore how, although the various interventions and initiatives at policy and institutional level have subsequently been woven into a narrative of strategic policy imperatives, they were largely initiated and developed by committed individuals with an interest in improving researcher culture. This supports and reinforces the call for institutional change in the REMO Manifesto through creating and sharing evidence-based practices, paying special attention to bottom-up initiatives.

Implications

The implications are that everyone engaged in researcher development can take small scale, often low cost actions at policy and institutional level which can have long term and wide ranging impacts. Drawing on the range of examples with which we have engaged, we will encourage participants to identify an action which can be implemented in their own context.

Acknowledgments

Exploring wellbeing and mental health and associated support services for postgraduate researchers (2018)

The Concordat to Support the Career Development of Researchers (2019)

R&D People and Culture Strategy (2021)

New Deal for Postgraduate Research (2022)

REMO Researcher Mental Health and Wellbeing Manifesto (2021)

The science of well-being: An integrative approach to mental health in Academia

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Indicate your track:

(Underline the track, which suits your abstract the most. You can select more than one track)

1. Scientific and practitioners' research presentations
    a. Bottom-up and community-driven interventions
    b. Institutional interventions and policies
    c. Policy-Level insights
2. Workshop/hands-on practices for enhancing researcher mental health and well-being

Purpose

According to the ReMO Researcher Mental Health and Well-being Manifesto, there is a growing consensus for governments and institutions to consider mental health and well-being as top priorities. If societies and organizations want to be effective promotors of well-being and mental health, then a clear understanding of the mechanisms through which individuals can adapt to their environments, in a healthy and happy way, is paramount. Put differently, to promote well-being and mental health in academia it is vital to adopt empirically validated frameworks that accurately capture the dynamics involved in well-being and mental health. By doing so, it will be possible to develop effective person-centered approaches to mental health that include policies and institutional practices that are tailored to the promotion of well-being.

Cloninger's biopsychosocial model of personality (which is strongly grounded in research from neurobiology, psychology, anthropology, genetics, evolutionary biology, and the social sciences) is arguably one the most robustly validated frameworks for conceptualizing adaptive and maladaptive human functioning. This model has the strength of describing the interactions among the biological, psychological, social, and spiritual dimensions of experience that are known to favor well-being, and has been widely demonstrated to be an excellent predictor of human functioning in its various expressions. Research has shown, for example, that this model accounts for substantial variance in maladaptive functioning in clinical and 'normative' community samples, but also explains significant

variance in expressions of adaptive functioning and human flourishing. Indeed, studies show this model is strongly predictive of human capacities for creativity, longevity, pro-social behavior, self-awareness, positive adaptation different challenges, positive mental health and well-being.

In this talk, we will discuss the potential of Cloninger's biopsychosocial model as a conceptual framework for understanding the well-being and mental health of academics and university staff, including their ability to thrive when confronted with the challenges of academia. Because this model describes the processes that underlie well-being in all people – regardless of their age, culture, or gender – in any setting, it is readily applicable to academia. We will describe how this model offers an empirically validated framework that can promote the recognition of mental health and well-being; and a person-centered approach to training, career management, and the promotion of well-being within academia. More specifically, we will outline how Cloninger's model allows for an clear understanding of the dynamics underlying mental health and well-being, and how major indicators of well-being -- negative affect, positive affect and life satisfaction – depend on different integrations of biopsychosocial dimensions.

Finally, we consider the potential of a person-centered biopsychosocial well-being coaching intervention, based on Cloninger's approach, in the context of academic, including in doctoral training programs and in organizational approaches to promoting positive mental health and well-being. This intervention has been empirically shown to increase overall mental and physical health, happiness, life satisfaction, sense of accomplishment, energy level, and social and family life satisfaction in various types of professional, but not yet in the context of academia. Thus, in summary, in this talk we address the following question: How can a person-centered biopsychosocial approach to well-being and mental health and associated coaching intervention benefit those who work in academia?

Resources

Cloninger CR (2004). *Feeling Good: The Science of Well-Being*. New York, Oxford University Press.

Cloninger CR, Zohar AH, Cloninger KM. (2010). Promotion of Well- being in Person-centered Mental Health Care. *Focus, 8*:165-179.

Cloninger, C. R. (2006). The science of well-being: an integrated approach to mental health and its disorders. *World psychiatry, 5*(2), 71.

Cloninger, C. R. (2013). What makes people healthy, happy, and fulfilled in the face of current world challenges?. *Mens Sana Monographs, 11*(1), 16.

Cloninger, C. R., & Cloninger, K. M. (2013). People create health: effective health promotion is a creative process. *International journal of person centered medicine, 3*(2), 114.

Cloninger, C. R., & Zohar, A. H. (2011). Personality and the perception of health and happiness. *Journal of affective disorders, 128*(1-2), 24-32.

Cloninger, C. R., Salloum, I. M., & Mezzich, J. E. (2012). The dynamic origins of positive health and wellbeing. *International Journal of Person Centered Medicine, 2*(2), 179.

Cloninger, K. M., & Cloninger, C. R. (2020). The psychobiology of the path to a joyful life: implications for future research and practice. *The Journal of Positive Psychology, 15*(1), 74-83.

Eley, D.S., Cloninger, C.R., Walters, L., Laurence, C., Synnott, R., Wilkinson, D. (2013). The relationship between resilience and personality traits in doctors: implications for enhancing well being. *PeerJ*, 1: 3216. http://doi.org/10.777/peerj.216.eCollection

Eley, D. S., Leung, J., Hong, B. A., Cloninger, K. M., & Cloninger, C. R. (2016). Identifying the dominant personality profiles in medical students: implications for their well-being and resilience. *PloS one, 11*(8), e0160028.

Josefsson, K., Cloninger, C. R., Hintsanen, M., Jokela, M., Pulkki-Råback, L., & Keltikangas-Järvinen, L. (2011). Associations of personality profiles with various aspects of well-being: a population-based study. *Journal of affective disorders, 133*(1-2), 265-273.

Moreira, P. A., Inman, R. A., & Cloninger, C. R. (2021). Virtues in action are related to the integration of both temperament and character: Comparing the VIA classification of Virtues and Cloninger's biopsychosocial model of personality. *The Journal of Positive Psychology*, 1-18. https://doi.org/10.1080/17439760.2021.1975158

Moreira, P.A.S., Inman, R.A. & Cloninger, C.R. (Submitted, Under Review). *Disentangling the Personality Pathways to Well-being*. Manuscript Submitted for Publication.

Zwir, I., Del-Val, C., Arnedo, J., Pulkki-Råback, L., Konte, B., Yang, S. S., ... & Cloninger, C. R. (2021). Three genetic–environmental networks for human personality. *Molecular psychiatry, 26*(8), 3858-3875.

Zwir, I., Del-Val, C., Hintsanen, M., Cloninger, K. M., Romero-Zaliz, R., Mesa, A., ... & Cloninger, C. R. (2021). Evolution of genetic networks for human creativity. *Molecular psychiatry*, 1-23.

Employees Crafting Favorable Working Conditions – Triple Loop Learning in the Higher Education Sector

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1. Scientific and practitioners' research presentations
    a. Bottom-up and community-driven interventions

Purpose

The aim of this presentation is to offer new insights into how organizations may learn through the course of continuous and systematic interventions for mental health and wellbeing in the higher education sector. By ensuring that lessons, or experience, regarding organizational interventions, are harvested within the organization to support future change efforts the organization is building a learning capability (triple-loop-learning) (Von Thiele Schwarz et al., 2020). In this study, we address this triple loop learning through 1) exploring how the organizations have worked to improve both their intervention targets and their intervention work, and, 2) by looking deeper into the mechanisms behind transferring experiences from one intervention process to another, thus, continuously improving both the work environment and their intervention work.

The uniqueness of this study is twofold. 1) Researchers normally leave the organization after the evaluation of the change process is completed. The longitudinal process studied offers the opportunity to investigate a circular process of change as it plays out for the fourth and even 5th time. 2) The importance of learning and learning transfer are amplified in a sector where central stakeholders are employed on fixed term contracts experiencing extraordinary challenges with making sure valuable lessons are not lost while continuously operating to improve their work environment.

Design

The organization studied in this project is a Norwegian University that has been using the research-based intervention program, ARK (Norwegian abbreviation for work environment and climate survey, see Innstrand, Christensen, Undebakke, & Svarva, 2015) to screen and develop their psychosocial work environment continuously for more than 10 years. The ARK intervention program is built around the suggested five phases of Nielsen, Randall, Holten, & Rial-Gonzalez (2010) as a framework for the processual work with organizational mental health and well-being interventions, including 1) preparation, 2) screening, 3) development of action plans, 4) implementation, and 5) evaluation of interventions. ARK is currently being used by 23 universities and university colleges across Norway, and in two units in Sweden. Finally, ARK includes a database of more than 55.000 responses from all surveys conducted within the program. In this project the ARK intervention program is used as a framework for exploring some departments that have succeeded with continuous and systematic intervention work.

We have been cooperating with the university and faculty work environment coordinators to detect and reach out to units that has succeeded with their intervention work. Initial contact was established with the leader of the underlying units (departments and units). The leaders forwarded the invitation to participate in the study to all the employees in the respective units.

Data were collected through interviews as recommended by Nielsen & Randall (2013) in order to reveal the participants mental models (experiences) regarding the success of the intervention process. Mohammed, Ferzandi, and Hamilton (2010) argue that focus groups are a powerful method to reveal whether shared experiences have developed. Thus, the interviews were conducted in focus groups (N=38), consisting of either leaders (n=14; initiators), key stakeholders (n=12; executives), or employees (n=12; experiencers), working with the work environment in the 4 chosen units. The sample consisted of employees of different age, gender, and academic positions. Lastly, the data were analyzed in accordance with the framework of Thematic Analysis (Braun & Clarke, 2006) to provide knowledge about the groups shared experiences of the intervention work.

Results

Preliminary results indicate that the main factor of success behind sustainable intervention work for mental health and well-being may be enabling, motivation and steering employee participation. Abildgaard et al. (2018) suggested 4 forms of participation, namely participation in content, process, the directness of the participation and participation as a goal in itself. We find support for the latter as a key for successful and sustainable intervention work. In these organizations the individual employee is motivated and enabled to improve their own working conditions in line with their actual needs. To enable and motivate for this behavior to last, the organizations have worked to create a culture of improvement, cooperation and knowledge sharing. In these organizations the focus is on employees getting to know one another and acknowledge the organizations diversity. This makes the employees more likely to work together to combine strengths and abilities in diverse groups of complementing competencies which effectively reduces the strain of a demanding and complex job. By embracing that progress comes from trial and error and that challenges are something to be shared, employees are invigorated to take initiative and improve their work situation together. To facilitate, the management has to enable, motivate and set the course for this collective continuous improvement of the work environment. Leaders must provide the necessary resources and act as role models that trusts their employees to do a good job and to collectively cocreate the environment that best enables them to do this. To ensure such processes the organizations have developed policies and practices that embraces the importance of the organization, leader, group and individual level for employees to use their strengths and abilities to improve their own working conditions and thereby mental health and wellbeing in line with the goals of the organization.

Implications

This study contributes to the knowledge on participation in research on organizational interventions for mental health and wellbeing by elaborating on what is necessary on the individual, group, leader and organizational level to facilitate for forms of participation that enables sustainable intervention work. In addition, the results from this study provides some important findings regarding how managers and practitioners in academia can work to motivate employees to create their own favorable working conditions, granting them with the best opportunity to stay healthy, happy and productive.

Acknowledgments

ARK (arbeidsmiljø og klimaundersøkelser)

The ARK programme – bottom up organizational health interventions for improving well-being, health and productivity in the academic sector in Norway

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Scientific and practitioners' research presentations

a. Bottom-up and community-driven interventions
b. Institutional interventions and policies
c. Policy-Level insights

Purpose

The aim of this presentation is, by showing the results and experiences from the ARK-programme (Innstrand & Christensen, 2020), to suggest new and holistic approaches to tackle some of the challenges in the academic sector regarding mental health. The value of this presentation is to show promising experiences and results (Christensen et al., 2018) from a large-scale intervention programme for mental health in the workplace with a bottom-up profile. The programme includes a large databank of quantitative data and a unique opportunity to follow processes at over 20 universities and university colleges (using ARK for qualitative data collection and process evaluation.)

Considerable knowledge has accumulated concerning risk factors in organisations and their connections to occupational illnesses and injuries, comparably less is known about effective participatory interventions for reducing the risk factors and promoting resources in the workplace, and especially in the academic sector. Nordic countries have a history of pioneering research on the alienation of work and the dangers of Taylorism and a broader concern of work on democratization, tripartite cooperation between the parts in work life and

the state, and alternative ways of work organization. The Nordic model defines the elements of good work such as autonomy, variety, learning and participation in decisions. These contextual characteristics have been institutionalized as shared attitudes towards work, the responsibility of organizations towards employees and the focus on worker health and productivity. The ARK programme has therefore a special emphasis on participation and strengthening the psychosocial work environment in the organizational development processes.

Design

ARK is an Norwegian abbreviation for "Arbeidsmiljø- og Klima undersøkelser " (work environment and climate surveys), and is a comprehensive research based plan and tool for 1) systematic mapping of the psychosocial work environment and 2) development and implementation of interventions for improving well-being, health and performance in higher education in Norway (Innstrand et al., 2015). The objective of ARK is that it should be used as a leader tool that contributes to understanding and development of the work environment with a focus on both demands and resources. ARK ensures compliance with the working environment act on systematic HSE-work with psychosocial factors, it generates a basis for interventions in the work environment, it is an arena for participation and influence, it is founded in cooperation between the Parties of Working Life and it is made for the employee with a participatory bottom up approach. Nielsen, et al. (2010) developed a framework including five important phases of an organizational health intervention, together with the core elements that are to be reflected on under each phase. The phases are: 1) Initiation, 2) screening, 3) development of actions, 4) implementation of interventions, and 5) evaluation of interventions. Participation of the employees is important in all phases. The five phases are not orthogonal, but in a more simplistic way

illustrate complex processes of overlapping and interaction between the different phases (Nielsen & Randall, 2013). The ARK intervention-programme is built on, and all departments should follow, the suggested five phases.

The data from the questionnaire survey (KIWEST) is stored in a common databank and includes at this time over 45000 respondents. Over 20 universities and university colleges in Norway use the ARK intervention programme and it thereby gives us a unique opportunity to follow the processes for research purposes and uncover the success factors for improving mental health in academia.

Results

One of the success factors for the ARK intervention programme that was found was the bottom-up participatory profile founded in the core of the Nordic model (Christensen et al, 2019; Helland et al, 2021). The advantage of this profile contributed firstly to put the psychosocial work environment on the agenda and establish a communication channel for the work environment between the leader and the employees. The safety representative and line manager of each department were obliged to sit to together and fill in the forms regarding the implementation and evaluation of the interventions they had chosen and agree on the results. The interventions were further developed locally targeting special needs strengths and challenges. It also had success by focusing on resources and the motivational processes of the psychosocial work environment in addition to the demands and health impairment processes. Working on these two processes felt motivating and constructive for the employees when developing actions for mental health. The work within the ARK-programme has been contributing to an understanding and development of the work environment with a focus on both demands and resources. It has also ensured compliance with the working environment

act on systematic HSE-work with the psychosocial factors that are defined as elements of good work within the Nordic model.

Implications

An "ARK approach" – as a comprehensive participatory plan/instrument for investigation and implementation of interventions, seems to be beneficial for the academic sector bringing knowledge of what constitutes a more healthy academic practice, and possibly be a win-win situation for both the employees and the organizations contributing to knowledge for a better world.

Acknowledgments

The ARK research platform at HUNT ARK - Arbeidsmiljø og miljøundersøkelser (ntnu.no)

Resources

Christensen, M., Innstrand, S. T., Saksvik, P. Ø. and Nielsen, K. (2019), The line manager's role in implementing successful organizational interventions, *The Spanish Journal of Psychology*, *21* (1), pp.1-11. doi: 10.1017/SJP.2019.4

Christensen, M., Dyrstad, J.M., and Innstrand, S.T. (2020) Academic work engagement, resources and productivity: empirical evidence with policy implications, *Studies in Higher Education, 45*(1), 86-99, DOI: 10.1080/03075079.2018.1517304

Helland, E., Christensen, M., Innstrand, S. T., Iversen, A., & Nielsen, K. (2021). Safety Representatives' Job Crafting in Organizational Interventions: Driver, Counselor, Watchdog, or Abstainer. *Scandinavian Journal of Work and Organizational Psychology, 6*(1), 6. DOI: http://doi.org/10.16993/sjwop.137

Innstrand, S. T. and Christensen, M. (2020), "Healthy Universities. The development and implementation of a holistic health promotion intervention programme especially adapted for staff working in the higher educational sector: the ARK study", *Global Health Promotion*, *27* (1), pp.68-76. doi: 10.1177/1757975918786877

Innstrand, S. T., Christensen, M., Undebakke, K. G. and Svarva, K. (2015), "The presentation and preliminary validation of KIWEST using a large sample of Norwegian university staff", *Scandinavian Journal of Public Health*, *43* (8), pp.855-866. doi: 10.1177/1403494815600562

Title: Well-being, Social Integrity and Autonomy in Doctoral Education

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Indicate your track:
(Underline the track, which suits your abstract the most. You can select more than one track)

1. Scientific and practitioners' research presentations
    1. Bottom-up and community-driven interventions
    2. Institutional interventions and policies
    3. Policy-Level insights
2. Workshop/hands-on practices for enhancing researcher mental health and well-being

Purpose

The well-being of doctoral candidates is increasingly at risk. Committed action is needed to turn the negative spiral in work stress and work pressure. In the Netherlands there is a discussion ongoing about the manner of accountability of academics, how they are appreciated in their work, and more specific the unhealthy competitiveness (e.g. how many articles you have published in high ranking journals or the amount of funding you have raised).

The purpose of this presentation is to give an overview of the institutional interventions and policies that are developed to stimulate well-being of doctoral candidates at one of the universities in the Netherlands: Utrecht University. For example the university board decided in 2021 on an additional focus in the yearly appraisal meeting for staff members: they are also evaluated on their supportive behavior (how they stimulate the wellbeing of team members) and on social integrity.

Design

In order to be able to give an overview of institutional interventions and policies to stimulate well-being of doctoral candidates online desk research was performed (without systematic methodology yet). In addition, interviews with PhD candidates were conducted to provide in-depth understanding.

Results

Both PhD candidates themselves and Utrecht university has taken initiatives to turn the negative spiral in work stress and work pressure. A few initiatives are listed below.

Bottom-up initiatives:

- The overall network of doctoral candidates in this specific university started with a survey on work-stress amongst doctoral candidates. The percentage of work-stress was extreme high. In research studies there exists confirmation of these high levels of work-stress and

work-pressure amongst doctoral candidates (Levecque, Anseel, De Beuckelaer, Van der Heyden & Gisle, 2017; Van der Weijden & Meijer, 2017). Also the risks of high levels of work-stress and work-pressure are investigated, like not finishing the doctoral thesis timely and drop-outs (Herfs, Brown, Farrell, & Meiser, 2019); burn-out and sick-leave (Van der Weijden & Meijer, 2017; Cornér, Pyhältö, Peltonen, & Löfström, 2021); and loosing research investments (Van de Schoot, Yerkes, Mouw & Sonneveld, 2013; Golde, 2005; Gardner, 2010).

- Every graduate school of one of the Dutch universities has a PhD-council and they have started their own working groups on mental well-being (surveys, urgency calls to the board and management, initiatives in retreats, presentations, workshops).

Top-down initiatives:

Based upon the above bottom-up initiatives and research outcomes Utrecht University needed to deal with problems and risks of well-being of their (young) researchers.

- The graduate schools of Humanities started with the function of a PhD-coach.
- Later followed with the function of PhD-psychologist for doctoral candidates for the whole university and the connected medical and research centers.
- The university medical center started with the function of PhD-confidential advisor and later other graduate schools followed.
- PhD-courses on soft skills to prevent ill-being and feeling of unsafety (given by the PhD-psychologist) were implemented via the graduate schools (with specific topics, like “Balance (coping with stress and pressure)”; “Resilience (coping with dependency)”; “Self-management (coping with procrastination)”; “Transparent communication & interaction”; and “Mindfulness”).
- This university is also one of the four “caring universities” in the Netherlands, which developed free online modules (with an online coach) to prevent ill-being. The topics are mood problems, anxiety, procrastination and coping with the corona-pandemic). These were first developed for bachelor and master students and since September also open for doctoral candidates.
- The Human Resources (HR) Developmental Guide provides courses and guided intervision for all employees (so also for supervisors and doctoral candidates).
- Courses for (starting) supervisors and masterclasses were developed and given.
- At university level a theater on integrity (“Mindlab”) was given for free to all employees – a confronting play based upon many interviews with academics. This has made very explicit the vulnerable and dependent position of doctoral candidates.

In addition, I recently started a PhD study on well-being of doctoral students. The overall research question is how do doctoral candidates develop their professional autonomy throughout their (international) doctoral education and how do they profit from autonomy support of their supervisors?

Why autonomy? Because autonomy is one of the core elements in (re)gaining mental well-being (Bohlmeijer, et al., 2016, Vendrig, 2016), and is highly related to intrinsic motivation and therefor work-pleasure (Deci, Connell & Ryan, 1989; Devos, Van der Linden, Boudrenghien, Azzi, Frenay, Galand, & Klein, 2015; Vakkaila & Pyhältö, 2016).

Implications

The results of my planned longitudinal in-depth interviews and surveys for doctoral candidates as well as (their) supervisors will be used to develop two types of training courses, one for doctoral candidates (gaining professional autonomy) and another for supervisors (autonomy-support). The effectivity of the courses will be tested by pre- and post-measurements using The Resilience Evaluation Scale (RES) of Van der Meer et al (2018), and the Autonomy-Connectedness Scale (ACS) of Bekkers et al (2016). This could provide evidence-based practices and guidelines (a guide for supervisors how to support autonomy doesn't exist yet (Barnard & Shultz, 2019).

Acknowledgments

Not applicable

Resources

Barnard, A. & Shultz, G.V. (2019). "Most important is that they figure out how to solve the problem": how do advisors conceptualize and develop research autonomy in chemistry doctoral students? Higher Education (2020) 79:981–999 https://doi.org/10.1007/s10734-019-00451-y Published online: 8 November 2019 # Springer Nature B.V. 2019

Bekkers, M., Helsdingen, M.A., van, Rutten, L. & Kouwenhoven, B. (2016). Behandelprotocol voor autonomie-versterkende interventie. Houten: Bohn Stafleu van Loghum.

Bernstein, B.L., Evans, B. Fyffe, J., Halai, N., Hall, F.L., Jensen, H.S., Marsh, H. & Ortega, S. The Continuing Evolution of the Research Doctorate. In: Nerad, M. & Evans, B., Eds (2014). Globalization and Its Impacts on the Quality of PhD Education: Forces and Forms in Doctoral Education Worldwide. Sense Publishers.

Bohlmeijer, E., Ten Klooster, P., De Kleine, E., Westerhof, G. & Lamers, S. (2016). Geestelijke gezondheid als positieve uitkomst van behandeling: Een empirische vergelijking van drie meetinstrumenten. *De Psycholoog, 51 (4), 46-54.*

Bowen, G.A. (2006). Grounded Theory and Sensitizing Concepts. International Journal of Qualitative Methods, 5 (3), 12-23

Cornér, S., Pyhältö, K., Peltonen, J., & Löfström, E (2021), Interest, burnout, and drop-out intentions among Finnish and Danish humanities and social sciences Ph.D. students: International Journal of Doctoral Studies, 16, 593-609. https://doi.org/10.28945/4867

Deci, E.L., Connell, J.P. & Ryan, R.M. (1989). Self-Determination in a Work Organization. *Journal of Applied Psychology, 74 (4), 580-590.*

Devos, C., Van der Linden, N., Boudrenghien, G., Azzi, A., Frenay, M., Galand, B., & Klein, O. (2015). Doctoral supervision in the light of the three types of support promoted in self-determination theory. International Journal of Doctoral Studies, 10, 438-464. Retrieved from http://ijds.org/Volume10/IJDSv10p439-464Devos1858.pdf

Gardner, S. K. (2010). Contrasting the socialization experiences of doctoral students in high- and low-completing departments: A qualitative analysis of disciplinary contexts at one institution. Journal of Higher Education, 81(1), 61–81. https://doi.org/10.1353/jhe.0.0081

Gioia, D.A., Corley, K.G., & Hamilton, A.L. (2013). Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. Organizational Research Methods 16(1) 15-31

Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. The Journal of Higher Education, 76(6), 669–700. https://doi.org/10.1080/00221546.2005.11772304

Herfs, P., Brown, J., Farrell, N., & Meiser, U. (2019). PhD students and Ombuds: How Ombuds Contribute to Civil, Fair and Productive PhD Trajectories. European Network of Ombudsmen in Higher Education (ENOHE), Occasional Paper, nr. 12.

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. Research Policy, 46(4), 868-879. http://dx.doi.org/10.1016/j.respol.2017.02.008

Overall, N.C., Deane, K.L. & Peterson, E.R. (2010) Promoting doctoral students' research self-efficacy: combining academic guidance with autonomy support. Published online 21 July 2011: https://doi.org/10.1080/07294360.2010.535508

Teelken, C. (2018). Teaching assessment and perceived quality of teaching: a longitudinal study amongst academics in three European countries. European Journal of Higher Education, 8:4, 382-399. DOI: 10.1080/21568235.2018.1490661

Van der Meer, C.A.I., te Brake, H., van der Aa, N., Dashtgard, P., Bakker, A. & Olff, M. (2018). Assessing Psychological Resilience: development and Psychometric Properties of the English and Dutch Version of the resilience Evaluation Scale (RES). Frontiers in Psychiatry, 9: 169. Doi: 10.3389/fpsyt.2018.00169

Van de Schoot, R., Yerkes, M.A., Mouw, J.M. & Sonneveld, H. (2013). What Took Them So Long? Explaining PhD Delays among Doctoral Candidates. PLoS ONE 8 (7): e68839. https://doi.org/10.1371/journal.pone.0068839

Van der Weijden, I.C.M., & Meijer, I. (2017) Policy Report: The Mental Well-being of Leiden University PhD candidates. Technical Report. DOI: 10.13140/RG.2.2.24497.43364

Vekkaila, J. & *Pyhältö*, K. (2016). Doctoral Student Learning Patterns: Learning about Active Knowledge Creation or Passive production. *International Journal of Higher Education, 5 (2), 222- 235.* https://doi.org/10.5430/ijhe.v5n2p222

Vendrig, L. (2016). De VAR-2-app: beter inzicht op werk gerelateerde problematiek. *GZ-Psychologie, Tijdschrift over Gezondheidszorgpsychologie, 8 (2), 10 – 13.*

Developing a Wellbeing Lens for Researchers

Professor Jane Creaton, University of Portsmouth and Dr Rachel Moss, Robert Gordon University

Purpose

The purpose of this presentation is to analyse the development and applications of a tool to support the development of knowledge, behaviours and attributes that contribute to positive wellbeing and mental health for researchers. The Wellbeing and Mental Health Lens is one of a series of lenses on the Vitae Researcher Development Framework (RDF), a framework which was developed with researchers working in the higher education sector to support the planning, promotion and enhancement of professional development. The development of the lens was prompted by research undertaken in the UK which identified issues in the wellbeing and mental health of the postgraduate researcher culture and in research culture more widely. Within the wider context, the Postgraduate Researcher Experience Survey (2019) showed that the wellbeing levels of postgraduate researchers are below that of the general population and that anxiety is significantly higher than that of the undergraduate population. Moreover, a report commissioned by Wellcome (2020) indicated that poor research culture is leading to stress, anxiety and mental health problems. Both reports highlight a need to focus on strategies to support researchers and institutions for the promotion of good wellbeing and mental health within professional development and training.

Design

There are a number of lenses which have been created for the RDF to enable researchers to strategically align their professional development and training to specific areas of priority. Examples include: employability, intellectual property, teaching and information literacy. The impetus for the creation of this lens was work undertaken by a UK University as part of an Office for Students funded project to integrate the wellbeing and mental health of postgraduate researchers into the graduate school development and supervisor training programmes. It has been co-created with the UK researcher development community through

iterative engagement and consultation of sector experts to reflect the breadth and depth of different institutional contexts across the research landscape.

The lens selects 19 of 63 descriptors in the RDF which the engagement and consultation process identified as being the most important in supporting individual researchers and contributing to the creation of a mentally healthy environment and research culture. The lens can be used by individual researchers to: (1) identify how the skills and attributes they have developed underpin their development in relation to wellbeing and mental health; (2) select areas that they want to develop to build good wellbeing and mental health; (3) to provide a language to evidence the transferability of their skills and attributes in relation to wellbeing and mental health. At an institutional level, the lens can demonstrate to researchers and other stakeholders: (1) how good wellbeing and mental health can contribute towards the overall professional development of researchers; (2) align existing resources professional development provision to promote positive wellbeing practices; (3) provide a framework against which researchers, supervisors and research developers can measure institutional practices and commitments.

Results

There are a number of different ways in which universities have used the RDF framework to enhance researcher development, for example using the framework to facilitate skills needs analyses for doctoral students. Students can identify areas of development and create action plans to address them. In some cases, this may be used as an induction activity, or to inform reviews of progress, or to assist students in selecting appropriate professional development activities. For example a UK University has used it to inform its programme for new academic staff, requiring staff to complete a Professional Development Plan (PDP) mapped to the RDF and planning actions and targets to achieve and enhance existing attributes. It concluded that this process could be used for teaching-only staff to develop and expand their role (Bray & Boon, 2011). However, there has been less attention paid to how the RDF different lenses can be used and this presentation will explore some specific suggestions about how the Wellbeing RDF lens can be incorporated into strategies for improving research culture within institutions.

Implications

The Wellbeing lens provides a useful tool that can be used to support the aims and objectives of the REMO Researcher Mental Health and Wellbeing Manifesto. At the micro level, it can support a person-centred approach to training and career management, enabling researchers to explicitly align their activities to support and promote good mental health and wellbeing. At the meso level, it enables wellbeing to be explicitly addressed in the development of programmes to support staff and supervisors. The co-created nature of the lens through engagement and consultation with key stakeholders also promotes ownership of the resources by researchers and empowers them to contribute to the improvement of research culture within their own spheres of influence.

Acknowledgments

Bray, R. and Boon, S. (2011), "Towards a framework for research career development", International Journal for Researcher Development, Vol. 2 No. 2, pp. 99-116. https://www.emerald.com/insight/content/doi/10.1108/17597511111212709/full/html

Concordat to Support the Career Development of Researchers https://researcherdevelopmentconcordat.ac.uk/

Williams, S. Postgraduate Research Experience Survey 2019 https://www.advance-he.ac.uk/knowledge-hub/postgraduate-research-experience-survey-2019

Wellcome (2020) What researchers think about the culture they work in https://wellcome.org/reports/what-researchers-think-about-research-culture

Resources

Lenses on the Vitae Researcher Development Framework
https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework/lenses-on-the-vitae-researcher-development-framework

About the Vitae Researcher Development Framework
https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework

Wellbeing and mental health lens

https://www.vitae.ac.uk/vitae-publications/rdf-related/wellbeing-and-mental-health-lens/view

TITLE: Developing PsyCap and Self-Compassion in PhD Students: The Effects of two Training Interventions on Well-Being
AUTHORS: Luisa Solms, Machteld van den Heuvel, Barbara Nevicka and Astrid C. Homan

Indicate your track:

(Underline the track, which suits your abstract the most. You can select more than one track)

1. Scientific and practitioners' research presentations
    a. Bottom-up and community-driven interventions
    b. Institutional interventions and policies
    c. Policy-Level insights
2. Workshop/hands-on practices for enhancing researcher mental health and well-being

Maximum length: 1000 words

All abstracts must be between 500 and 1000 words excluding title, references and tables/graphs. Names and institutions/organisations of authors should not be included in the text of the abstracts to facilitate the blind peer review process but entered separately in the online system.

Purpose

PhD students are increasingly suffering from mental health problems. Compared to the normal population, PhD students are six times more likely to develop anxiety or depression (Evans et al., 2018). Although research has produced substantial knowledge about factors contributing to PhD students' ill-being (e.g., publication pressure, work-home conflict, career uncertainty, self-doubt; Schmidt & Hansson, 2018), little is known about how to support PhD students in practice. Given PhD students' individual suffering as well as its impact on department and institution functioning, intervention strategies to support PhD students are strongly needed.

Based on Conservation of Resources (COR; Hobfoll, 1989) and Job Demands-Resources (JD-R; Demerouti et al., 2001; Bakker & Demerouti, 2007) Theory, we argue that PhD students' ill-being results from an imbalance between high job demands and (a lack of) job and personal resources. Given that changing the work environment directly, that is targeting job demands and job resources, can be challenging, we propose to foster PhD students' well-being through the development of personal resources, which reflect peoples' beliefs about their ability to control the work environment successfully (Hobfoll et al., 2003).

Specifically, in this research, we propose to develop PhD students' psychological capital (PsyCap; Luthans et al., 2007), and self-compassion. PsyCap is a malleable four-faceted psychological resource encompassing hope, self-efficacy, resilience and optimism while self-compassion refers to being understanding and kind to oneself when confronted with difficulties (Neff, 2003). We argue that PsyCap will support PhD students in meeting the current demands of their PhD, while self-compassion will help PhD students to deal effectively with own shortcomings, something that is inevitable in the PhD study process.

Design

Using a randomized controlled trial (RCT), we investigated the effectiveness of two training interventions: 1) PsyCap training, and 2) self-compassion-based PsyCap training, which extends the PsyCap training with self-compassion exercises. Both training programmes consisted of a 3.5 hours online workshop and a 4-week period of home practice. The home practice included weekly explainer videos, follow-up exercises, and peer group meetings. We measured PhD students' PsyCap, self-compassion and well-being (i.e., positive affect, work pressure, support seeking) with questionnaires before and directly after the intervention. The final sample consisted of 117 PhD students of which 74 were female and 40 were male. Three participants did not disclose their gender. On average, PhD students were 29.63 years old and in the second year of their PhD trajectory. Approximately two-thirds (71,8%) of the participants were international PhD students and one-third (28,2%) was Dutch.

We expected both intervention groups to show increases in PsyCap (and self-compassion) and well-being from baseline to post-intervention and b) compared to the control group. In addition, we expected the self-compassion-based PsyCap training to be superior to the PsyCap training in building PhD students' PsyCap and well-being.

Results

Planned contrast indicated that the PsyCap training led to improvements in psychological capital and work pressure relative to baseline. The self-compassion-based PsyCap training resulted in increases in self-compassion relative to baseline and control group but, unexpectedly, did not increase psychological capital. With regard to well-being, participants reported higher positive affect and support seeking compared to baseline, control group and the PsyCap only group. Moreover, work pressure decreased relative to baseline and control group.

Implications

Our findings suggest that developing PsyCap and self-compassion may be effective strategies to support PhD students' well-being. Moreover, we found initial evidence that extending PsyCap training with self-compassion practice constitutes an advanced strategy to promote PhD students' well-being. Specifically, although the self-compassion-based PsyCap training was not superior to the PsyCap training in developing PsyCap, it showed greater effects on well-being. By testing the effectiveness of a self-compassion-based PsyCap intervention in PhD students, we extend the PsyCap intervention literature in the unexplored field of higher education and expand the original PsyCap Intervention-model, offering a potentially advanced strategy to boost employee well-being. Finally, our research provides guidance to higher education institutions seeking evidence-based strategies to support their PhD students.

Resources

Bakker, A. B., & Demerouti, E. (2007). The job demands‐resources model: State of the art. *Journal of Managerial Psychology*.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499.

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology*, 36(3), 282-284.

Hobfoll, S. E., Johnson, R. J., Ennis, N., & Jackson, A. P. (2003). Resource loss, resource gain, and emotional outcomes among inner city women. *Journal of Personality and Social Psychology*, 84, 632–643.

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60(3), 541-572.

Moate, R. M., Gnilka, P. B., West, E. M., & Rice, K. G. (2019). Doctoral student perfectionism and emotional well-being. *Measurement and Evaluation in Counseling and Development*, 52(3), 145-155.

Neff, K. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, 2(2), 85-101.

Schmidt & Hansson (2018). Doctoral students' well-being: a literature review. International *Journal of Qualitative Studies on Health and Well-being*, 13(1), 1508171.

Developing Coping Mechanisms for Stress Management of Researchers

Dilara Özel, Middle East Technical University

Track 1: Scientific and practitioners' research presentations

a. Bottom-up and community-driven interventions
b. Institutional interventions and policies
c. Policy-Level insights

Stress is defined as an introverted reaction of individuals to situations that they perceive as a challenge or threat, or as a situation that is sometimes exposed as a result of time pressure, sometimes as a result of an unexpected event or reaction (Durna, 2006). It generally includes the psychological reactions to those threats or challenges that have an impact on well-being or physical conditions (Lazaruz, 1996; 2006). Research demonstrated that Ph.D. students, especially the students in the thesis period, are in the risk groups in terms of high stress and mental health problems (Ali & Kohun, 2006; Evans, Bira, & Vanderford, 2019; Levecque et al., 2017; Mantai & Dowling, 2015; Waight. and Giardonobe, 2018). Doctoral education has a long-term nature that requires constant effort and dedication. Progress can be somewhat slow and challenging emotionally as well as cognitively (Mantai & Dowling, 2015). Recent research on the mental health of doctoral candidates shows that high-stress levels can be caused or exacerbated by characteristics of the doctoral training environment and organizational functioning (Mackie and Bates, 2019).

Ph.D. study and semester, including frequent evaluations, low status, overwork, work-life imbalance, peer pressure, deadlines, financial difficulties, career uncertainty, an academic environment partially and/or fully competitive, publication pressure, and conferences characterized by active participation in the scientific environment (Kurtz‐Costes, Andrews Helmke, & Ülkü‐Steiner, 2006; Mays & Smith, 2009; Schmidt & Hansson, 2018). There are additional stressors such as feelings of uncertainty and bad relationships with supervisors, and the myriad roles that the doctoral student is expected to take as a student, employee, researcher, spouse, or parent (Martinez, Ordu, Sala, & McFarlane, 2013; Schmidt & Hansson, 2018; Schmidt & Umans, 2014).). In light of the number of potential stressors and complex work situations of doctoral students, maintaining a healthy work-life balance can be

challenging, and any or more of these problems can lead to stress symptoms (Devos et al., 2017; Martinez et al., 2013).

Studies on the mental health of doctoral students conducted in different countries show that doctoral students encounter mental health problems at a much higher rate than the general population (Evans, Bira, & Vanderford, 2019; Levecque et al., 2017; Smith & Brook, 2015; Panger, 2014). Bazrafkan et al. (2016) stated that Ph.D. students mostly use effective communication to deal with stress. However, they do not have wide range of coping strategies to deal with the stress. Somatic Experiencing (SE) is an approach that addresses the problems of stress, negative life experiences and trauma while focusing on the body and its reactions (Levine, 1997; 2010). This approach helps to understand the sensations in the body and to build the innate balancing capacity of the nervous system (Levine & Frederick, 1997; Porges, 2017). Furthermore, SE is an effective approach in emergency situations to build coping mechanisms in a short time. Thus, this study aims to develop a SE-based stress-management intervention program for Ph.D. students.

Purpose

Studies demonstrated that online support groups empower the clients (Barak et al., 2008; van Uden-Kraan et al., 2009). In addition, Mariano et al. (2019) indicated that the online group processes is an effective way to create coping strategies. SE is a resiliency-based approach that uses the nervous system fo regulation and demonstrates short-term results (Payne et al., 2015; Winblad et al., 2018). Briggs (2018) and Taylor and Saint Laurent (2017) expressed the effectiveness of the SE-based approach in group psychotherapy. This study aims to develop coping strategies and improve the already existed ones to reduce the stress level of PhD. students with SE-based exercises and activities in an eight-week group process. The main hypothesis of this study is as follows: Results of the scales on COPE Revised and MAIA would show a statistically significant difference in pretest and posttest compared to the control group. Furthermore, qualitative data would be expected to support the difference in quantitative data.

Design

Quasi-experimental design over a period of three months will be conducted to asses the effects of short-term group psychotherapy process. The recruitment of the group process has

not started yet. The flyer of the group psychotherapy will be announced in social media and mail groups. The control group will be formed by using the waitlist. Thus, these potential group members will be planned a short term intervention process after the quasi-experimental study.

Table 1

Study design

Weeks	0		8
Intervention Group	Pre-test	X1*	Post-test
Control Group	Pre-test		Post-test

X1= 8 sessions will be provided for the intervention group during the eight weeks.

Before starting the process, semi-structured interviews will be conducted with each potential group member for screening purposes. Group members will be decided according to the group purpose, their demographic information (age, education level, job, etc.), situations about getting psychological help from a professional, their resources while coping with stress, and scaling questions about their stress level. the related questionnaires will be sent to group members before and after the short-term intervention. Three months after the end of the process, semi-structured interviews will be conducted with participants for follow-up purposes.

Instruments

*Semi-structured Interview Protocol***.** The semi-structured interview protocol will be developed to understand the participants' current stress levels, resources (family, friends, etc.), and health/demographic information (getting psychological help, age, employment status, education level) before the group began. Two separate interview protocols were developed by the researchers because the first protocol included questions more about the demographic data and the resources of the individual, where the second semi-structured interview protocol included questions about the group process and the interventions (i.e. Which part(s) of the group process was more helpful for you? Which techniques you are using or planning to use

in your daily life? Are there any suggestions for future group work?). These interview protocols will be revised by academic and SE practitioners.

COPE Revised. The COPE Revised (COPE- R; Zuckerman & Gagne, 2003) is a 32-item questionnaire used to screen for coping mechanisms. It contains five scales: self-help, approach, accommodation, avoidance, and self-punishment. Individuals rate each question on a 4-point Likert scale ranging from 1 (*never do this*) to 4 (*always do it*). Internal consistency of the Turkish adaptation of the scales ranges from .92 to .93 (Dicle & Ersanlı, 2015).

Multidimensional Assessment of Interoceptive Awareness -2. (MAIA 2; Mehling, Acree, Stewart, Silas & Jones, 2018). This 37-item questionnaire is developed for understanding the perception of internal bodily changes. It has eight subscales; noticing, not-distracting, not-worrying, attention regulation, emotional awareness, self-regulation, body listening, and trusting. The questionnaire is a 6-point Likert scale with zero being "never" and five being "always". The Turkish version of the item consists of 32 items and six subscales; not-worrying, not-distracting, attention regulation, emotional awareness, self-regulation, body listening, and trusting. The internal consistency of the Turkish adaptation of the scales ranges from 1.33 to .75 (Özpınar, Dünder, Demir & Akyol, 2021).

Data Analysis

Data analysis will be conducted in two parts, including quantitative and qualitative data analysis. Quantitative analysis will be conducted by using SPSS. ANOVA (repeated measures) will be performed to assess the changes in group members and the waitlist control group. In addition, ANCOVA will be conducted to compare the effect of the dependent variable between group members. Qualitative data gathered from the semi-structured interviews will be analyzed using content analysis.

Implications

The result of the present study can be used to develop wide-range interventions for Ph.D. students by institutions and mental health services at the universities. The stressors experienced by Ph.D. students are various. Thus, these stressors should be considered by supervisors and policymakers. Since the Ph.D. students work mostly alone with their research (Tikkanen et al., 2021), particular attention should be given to creating support networks for

this vulnerable group. In addition, the importance of the intervention group will be highlighted for policymakers in this study. The results of this study will provide directions for future research.

Resources

Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. *Computers in Human Behavior*, 24, 1867–1883. http://dx.doi.org/10.1016/j.chb.2008.02.004

Bazrafkan, L., Shokrpour, N., Yousefi, A., & Yamani, N. (2016). *Management of Stress and Anxiety Among PhD Students During Thesis Writing. The Health Care Manager, 35(3), 231–240.*doi:10.1097/hcm.0000000000000012

Briggs, P. C., Hayes, S., & Changaris, M. (2018). Somatic Experiencing® informed therapeutic group for the care and treatment of biopsychosocial effects upon a gender diverse Identity. *Frontiers in psychiatry,* 9, 53. https://doi.org/10.3389/fpsyt.2018.00053

Dicle, A.N. ve Ersanlı, K. (2015). Başa çıkma tutumlarını değerlendirme ölçeğinin Türkçeye uyarlama geçerlik ve güvenirlik çalışması (Turkish standardization and the validity and reliability studies of the COPE). *The Journal of Academic Social Science, 3*(16), 111-126.

Levine, P. A. (1997). *Waking the Tiger: Healing trauma: The innate capacity to transform overwhelming experiences*. Berkeley, CA: North Atlantic Books.

Levine, P. A. (2010). *In an unspoken voice: How the body releases trauma and restores goodness.* Berkeley, CA: North Atlantic Books.

Levine, P., & Frederick, A. (1997). *Waking the tiger: Healing trauma through the innate capacity to transform overwhelming experiences.* Berkeley, CA: North, Atlantic Books.

Mariano, T. Y., Wan, L., Edwards, R. R., Lazaridou, A., Ross, E. L., & Jamison, R. N. (2019). Online group pain management for chronic pain: Preliminary results of a novel treatment approach to teletherapy. *Journal of Telemedicine and Telecare*. Advance online publication. http://dx.doi.org/10.1177/1357633X19870369

Mehling, W. E., Acree, M., Stewart, A., Silas, J., Jones, A. (2018). The multidimensional assessment of interoceptive awareness, version 2 (MAIA 2). *PLoS ONE,* 12.

Özpınar, S., Dünder, E., Demir. Y. & Akyol, M. (2021). Multidimensional assessment of interoceptive awareness (MAIA 2): Psychometric properties of the Turkish version. *Journal of Health Sciences Medicine,* 4(2), 132-136.

Payne, P., Levine, P. A., & Crane-Godreau, M. A. (2015). Somatic experiencing: using interoception and proprioception as core elements of trauma therapy. *Frontiers in Psychology*, 6(93), doi: 10.3389/fpsyg.2015.00093

Porges, S. W. (2017). *The pocket guide to the Polyvagal Theory: The transformative power of feeling safe*. W.W. Norton & Company.

Taylor, P. C. & Saint- Laurent R. (2017). Group Psychotherapy Informed by the Principles of Somatic Experiencing: Moving Beyond Trauma to Embodied Relationship. *International Journal of Group Psychotherapy 67*(1), 171-181.

Tikkanen, L., Pyhaltö, K., Bujacz, A. & Nieminen, J. (2021). Study engagement and burnout of the PhD candidates in medicine: A person-centered approach. *Frontiers in Psychology*,12.

van Uden-Kraan, C. F., Drossaert, C. H. C., Taal, E., Seydel, E. R., & van de Laar, M. A. F. J. (2009). Participation in online patient support groups endorses patients' empowerment. *Patient Education and Counseling*, 74, 61–69. http://dx.doi.org/10.1016/j.pec.2008.07.044

Zuckerman, M. & Gagne, M. (2003). The Cope Revised: Proposing a 5 Factor Model of Coping Strategies. *Journal of Research in Personality,* 37.

OSCAR: Development of the Mental Well-being Training Framework for Academics

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Purpose

This abstract aims to present the mental health framework developed for Project OSCAR (Online, open learning recommendations and mentoring towards Sustainable research CAReers), funded by ERASMUS+ Key Action 204 Higher Education. OSCAR aims to support the professional development of researchers, through the development of an online training and mentoring tool on mental health and career management. The tool uses AI based learning recommendations, to researchers across Europe. The training element of this initiative involves (not exclusively) the development of transversal skills from the mental health and well-being domain. In fact, there are growing concerns in recent years about the mental health of academics and the negative impact of academic workplaces and its demands on researchers' mental health and well-being (Houston, Meyer, & Paewai, 2006; Winefield & Jarrett, 2001; Eisenberg et al., 2007; Badri, 2019). Therefore, it is essential for researchers to learn how to manage stressful situations in their careers and improve their mental well-being. Taking that into account, the framework related to mental health was developed by the authors in order to propose and clarify the relevant and specific mental health skills that researchers can acquire and train, fostering their psychological well-being, allowing them to better deal with the demands of the academic workplaces and to create sustainable careers.

Design

OSCAR's Mental Well-being Training Framework was designed to theoretically define important dimensions of well-being for academics. The authors considered two complementary perspectives of well-being: (1) Diener's subjective well-being, which includes the concepts of life satisfaction and hedonic balance (Diener, 1984, 2009), and (2) Ryff's psychological well-being, which includes the dimensions of Self-Acceptance, Positive

Relations With Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth (Ryff, 1989; Ryff & Keyes, 1995). These dimensions were divided into five broad domains that represent different and mutually interdependent components of psychological functioning and well-being (Life satisfaction, Personal Growth, and Environmental Mastery were not included in this framework): Emotions (reflects hedonic balance dimension), Behavior & Agency (reflects autonomy dimension), Social Connections (reflects the positive relations with others dimension), Self-concept (reflects self-acceptance dimension), and Purpose & Meaning (reflects purpose in life dimension).

Fig. 1 Macro framework

To identify the skills that would be included in each domain, content analysis was carried out, and used to define the set of skills, addressing the common difficulties and needs of researchers. Authors considered both the research regarding academics' mental health, as well

as the general research on human psychological functioning. In the end a set of 16 skills were defined: 'Finding Meaning in Life', 'Finding Meaning at Work' (domain Purpose & Meaning), 'Awareness of Well-being', 'Recognizing and Understanding Emotions', 'Emotion Regulation', 'Stress Management' (domain Emotion), 'Setting Goals', 'Resilience', 'Accountability', 'Finding a Work-Life Balance' (domain Behavior & Agency), 'Strengthening Social Relationships', 'Assertive Communication', 'Interpersonal and Social Empathy' (domain Social Connections), 'Dealing with Perfectionism', 'Self-Kindness', and 'Self-Confidence' (domain Self-Concept).

Implications

The OSCAR Mental Well-being Training Framework sets out to address academia's mental health difficulties directly through skills training, and also indirectly by bringing awareness to this topic, creating a space of discussion between researchers, which will, hopefully, help in the elimination of the stigma associated with mental health issues in academia. Furthermore, some of the skills embedded into OSCAR can help individual researchers to act in ways that can induce over time a systemic change – for example social empathy, accountability, and assertive communication (Segal, 2011; Bergsteiner, 2012; Bergsteiner & Avery, 2003). The academic system may have to adjust to the type of research culture that OSCAR promotes and whereby individual researchers actively take care of their mental health, well-being and quality of life.

Acknowledgments

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References

Badri, S. K. Z. (2019). Affective Well-Being in the Higher Education Sector: Connecting Work-Life Balance with Mental Health, Job Satisfaction and Turnover Intention Issues inside the Academia Setting, *International Journal of Happiness and Development*, 5, 225-241. https://doi.org/10.1504/IJHD.2019.103382

Bergsteiner, H. (2012). Accountability Theory Meets Accountability Practice. Emerald Group Publishing.

Bergsteiner, H. & Avery, G.C. (2003). Responsibility And Accountability: Towards An Integrative Process Model. *International Business & Economics Research Journal* , 2, 31-40. https://doi.org/10.19030/iber.v2i2.3763

Davis, M.H. (1996). Empathy: A social psychological approach. Boulder, CO: Westview Press.

Delecta, P. (2011). Work-Life Balance. *International Journal of Current Research*, 3, 186-189

Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95, 542–575.

Diener, E. (2009). The science of well-being: The collected works of Ed Diener (Vol. 37). New York, NY: Springer Science & Business Media

Eisenberg, D., Gollust, S.E., Golberstein, E., & Hefner, J.L, (2007). Prevalence and Correlates of Depression, Anxiety, and Suicidality Among University Students. *American Journal of Orthopsychiatry*, 77, 534-542. DOI: 10.1037/0002-9432.77.4.534

Eisenberg, N. (2002). Empathy-Related Emotional Responses, Altruism, and Their Socialization. In R. J. Davidson & A. Harrington (Eds), Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature (p.131-164). Oxford University Press: New York.

Frost R.O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14: 449-68. https://doi.org/10.1007/BF01172967

Goodman, F. R., Doorley, J. D., & Kashdan, T. B. (2018). Well-being and psychopathology: A deep exploration into positive emotions, meaning and purpose in life, and social relationships. In E. Diener,S. Oishi, & L. Tay (Eds.), Handbook of well-being. Salt Lake City, UT: DEF Publishers.

Grant, A. M., Franklin, J., & Langford, P. (2002). The Self-Reflection and Insight Scale: a new measure of private self-consciousness. Social Behavior and Personality: An International Journal, 30(8), 821–835. doi:10.2224/sbp.2002.30.8.821

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2, 271–299. doi:10.1037/1089-2680.2.3.271

Harms, P. L., & Roebuck, D. B. (2010). Teaching the art and craft of giving and receiving feedback. *Business Communication Quarterly*, 73(4), 413-431. DOI: 10.1177/1080569910385565

Hayes, S. C., Strosahl, K., Wilson, K. G. (1999). Acceptance and Commitment Therapy: An experiential approach to behavior change. New York: Guilford Press.

Hayes, S.C., Strosahl, K.D., & Wilson, K.G. (2012). Acceptance and Commitment Therapy: the process and practice of mindful change (2nd edition). New York, NY, Guilford Press.

Hill, R. W., Huelsman, T. J., Furr, R. M., Kibler, J., Vicente, B. B., & Kennedy, C. (2004). A New Measure of Perfectionism: The Perfectionism Inventory. *Journal of Personality Assessment*, 82, 80–91. doi:10.1207/s15327752jpa8201_13

Houston, D., Meyer, L.H., & Paewai, S. (2006) Academic Staff Workloads and Job Satisfaction: Expectations and values in academe. *Journal of Higher Education Policy and Management*, 28, 17-30. DOI: 10.1080/13600800500283734

Lieberman, M.D., Eisenberger, N.I., Crockett, M.J., Tom, S.M., Pfeifer, J.H., & Way, B.M. (2007). Putting Feelings Into Words. *Psychological Science*, 18, 421–428. doi:10.1111/j.1467-9280.2007.01916.x

Mayer, J. D. (2004). "What is Emotional Intelligence?". UNH Personality Lab. 8.

Mikolajczak, M., Luminet, O., Leroy, C., & Roy, E. (2007). Psychometric Properties of the Trait Emotional Intelligence Questionnaire: Factor Structure, Reliability, Construct, and Incremental Validity in a French-Speaking Population. *Journal of Personality Assessment*, 88, 338–353. doi:10.1080/00223890701333431

Neff, K. (2003). The Development and Validation of a Scale to Measure Self- Compassion. Self and Identity, 2, 223-250.

Pearson, J.C. (1979). A factor analytic study of the items in the Rathus Assertiveness Schedule and the Personal Report Communication Apprehension. *Psychological Reports*, 45, 491-497. https://doi.org/10.2466/pr0.1979.45.2.491

Ryff, C. & Keyes, C. (1995). The Structure of Psychological Well-Being Revisited. Journal of personality and social psychology. 69. 719-27. 10.1037/0022-3514.69.4.719.

Segal, E.A. (2011). Social Empathy: A Model Built on Empathy, Contextual Understanding, and Social Responsibility that Promotes Social Justice. *Journal of Social Service Research*, 37, 266-277. doi:10.1080/01488376.2011.564040

Shrauger, J. S. & Schohn, M. (1995). Self-confidence in College Students: Conceptualization, Measurement, and Behavioral Implications. *Assessment*, 2, 255–278. https://doi.org/10.1177/1073191195002003006

Steger, M. F., Dik, B. J., & Duffy, R. D. (2012). Measuring Meaningful Work: The Work and Meaning Inventory (WAMI). *Journal of Career Assessment*, 20, 322–337. doi:10.1177/1069072711436160

Winefield, A.H., Jarrett, R. (2001). Occupational Stress in University Staff. *International Journal of Stress Management,* 8, 285–298. https://doi.org/10.1023/A:1017513615819

Summarising Literature on Mental Health in Academia: Machine Learning Methods and Human Expertise

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Purpose

Studying mental health in academic environment is a complicated topic, which was for a long time underrepresented in literature (Gurtie et al., 2017). In recent years, research findings have been accumulated in the area (Mattijssen et al., 2021), and their number is growing. The findings were summarized in systematic reviews, such as Sabagh et al. (2018) on faculty burnout, Hazell et al. (2020) on mental health of doctoral researchers, or Salimyedeh et al. (2021) on coping with stress in academia. However, this traditional approach deals with rather limited samples of publications: for instance, 36 papers in Sabagh et al. (2018), 22 papers in Hazell et al. (2020), and 52 papers in Salimyedeh et al. (2021). In this study, we rely upon advanced machine learning techniques that make it possible to obtain a wider picture of the area on larger samples of literature. Our task is to illustrate how machine learning methods and human expertise complement each other in summarizing literature on mental health in academia.

Design

Web scrapping and data analysis was conducted with Python on two samples of publications. The first was gathered from PubMed[1] as a reliable health-related resource, and the second was collected by ReMo experts[2]. We used abstracts of the papers for our analysis, as they are concise, informative, and comparable with each other (Daenekindt & Huisman, 2020). For scrapping the PubMed database, we specified a query with such terms as "mental health" and "student", "postdoc" or "graduate" in the title or abstract. The query had to be amended iteratively; for instance, the term "student" had to be supplemented with "…NOT t-test" after discovering that the query yielded papers unrelated to academia but containing "Student's t-test" among the methods listed in the abstract.

[1] https://pubmed.ncbi.nlm.nih.gov/
[2] See Researcher Mental Health Library (Zotero).

In both samples, rows with missing abstracts were removed. The resulting PubMed sample consisted of 1289 papers from 454 sources, and the ReMo sample of 245 papers from 102 sources. The publication years were in the range from 1970s to nowadays, with most papers in both samples published after 2015, as shown in Figure 1.

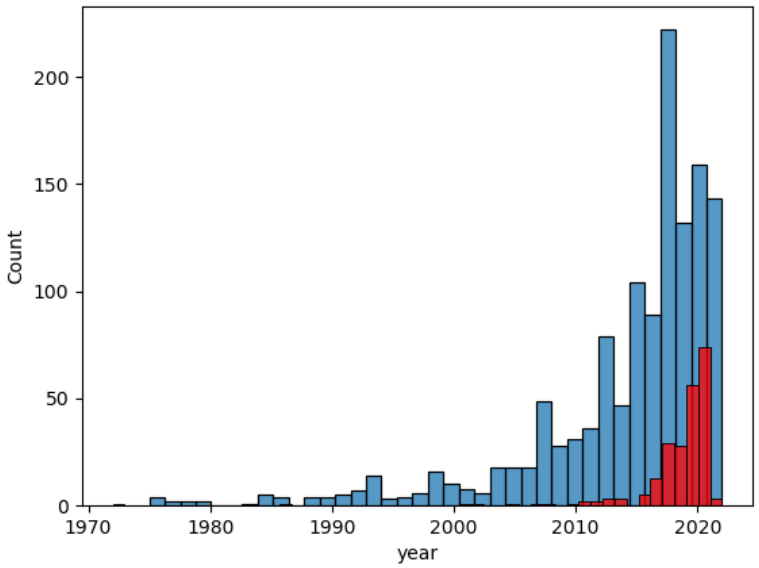

Figure 1. Publication year histograms for the PubMed sample (blue) and the ReMo sample (dark red).

To summarize the abstracts in each sample, topic modelling – an unsupervised machine learning method using patterns of word co-occurrence to reveal latent topics in the texts – was applied (Chaney & Blei, 2012). Topic modeling was conducted with Latent Dirichlet Allocation (LDA, see Blei et al., 2003). Relationships between most relevant words in each topic were visualized with graphs (Miranda-Jiménez et al., 2014).

Results

To determine the number of topics in each sample, the coherence score (Röder et al., 2015) was used. The results, as presented in Figure 2, indicated that three topics were optimal for the PubMed sample, and two topics for the ReMo sample.

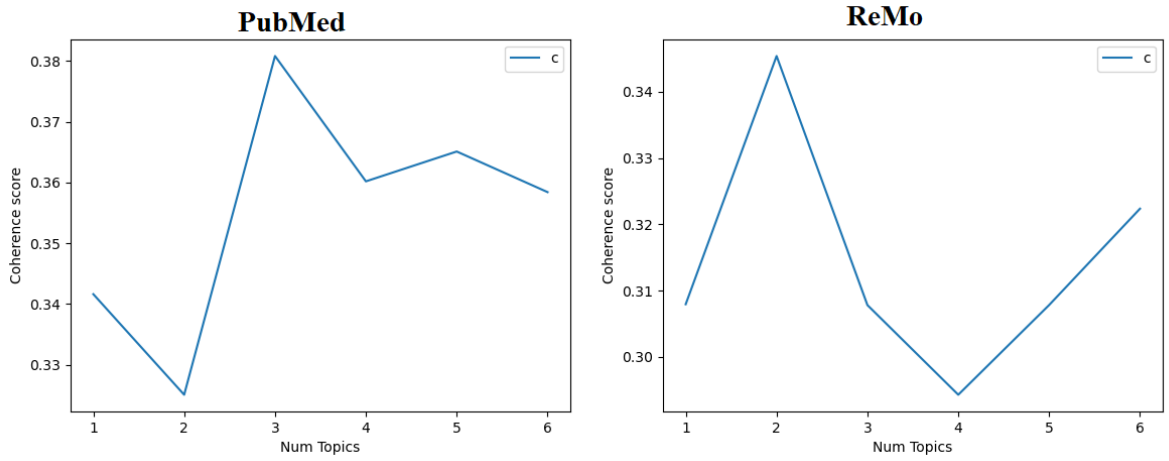

Figure 2. The coherence score graphs for the PubMed sample (on the left) and the ReMo sample (on the right).

LDA for each sample was explored with interactive visualisations. A screenshot of Jupiter notebook visualisation for the PubMed sample is presented in Figure 3. The left panel shows the general view of the model: the size of each circle indicates how prevalent the topic is, and the distance between the circles indicates how the topics relate to each other. The right panel shows the relevant words (tokens) for varying values of relevance metric λ, which can be interactively adjusted with a slider.

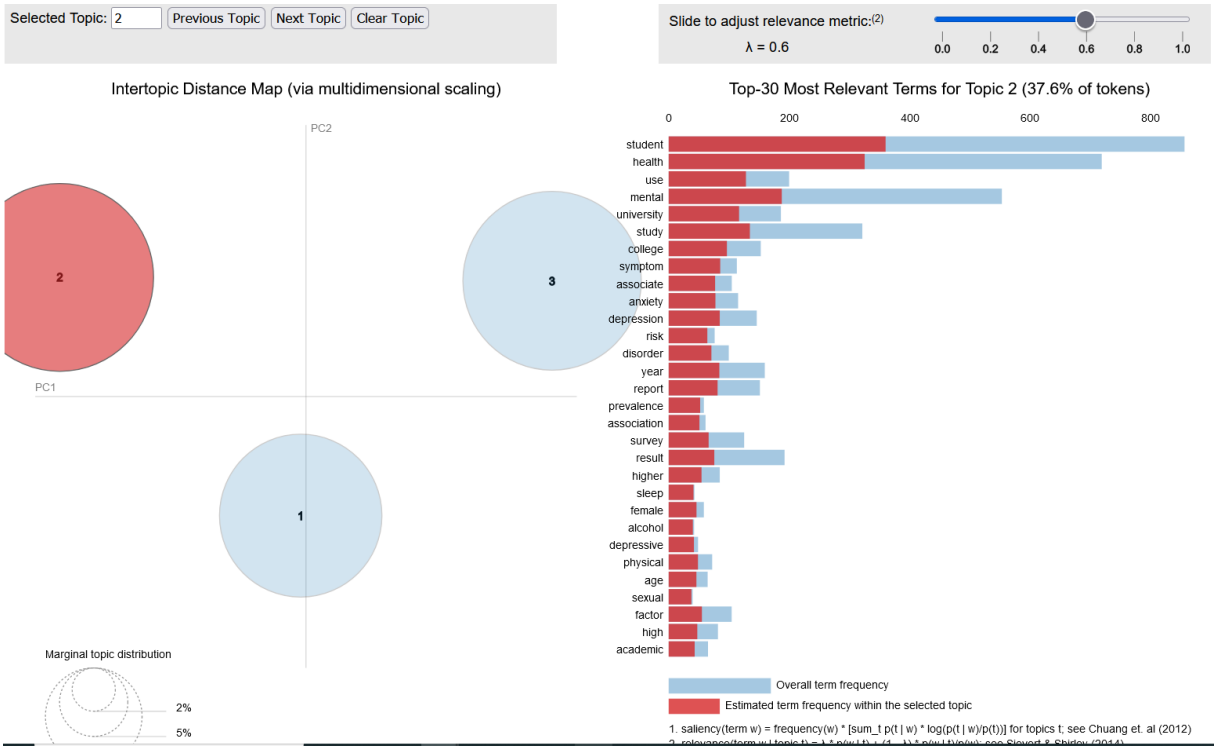

Figure 3. The screenshot of the LDA visualisation for the PubMed sample, with the largest topic selected.

The screenshot depicts the model with three well-separated topics and relevant words for the largest topic with $\lambda = .60$. The relevant words in the topic (with $\lambda = 1$) can be visualised as nodes in a graph, in which edges are understood as co-occurrences of these words. Such a graph for the largest topic in the PubMed sample is shown in Figure 4.

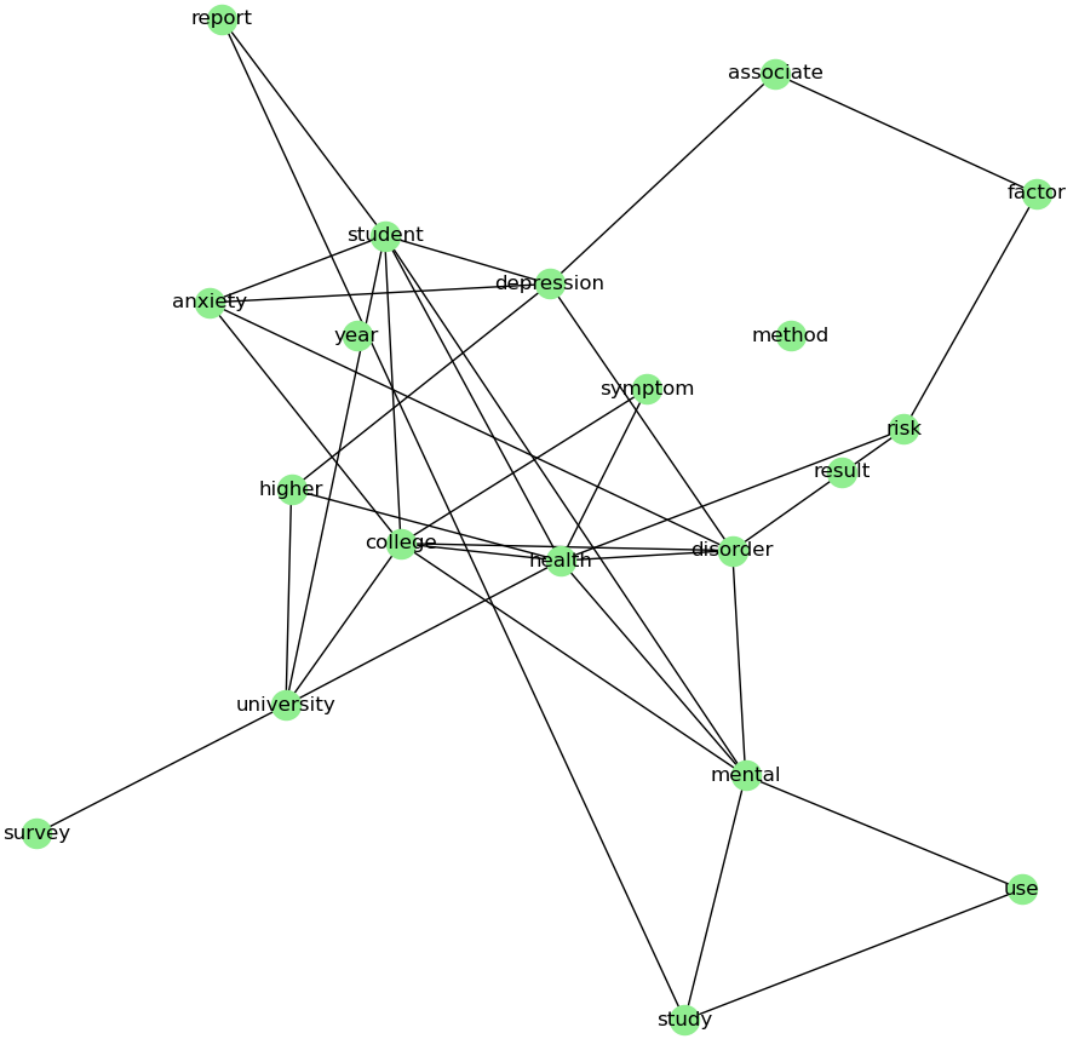

Figure 4. A graph visualising the relations between most relevant words in the largest topic of the PubMed sample.

Three topics in the PubMed sample were:

1) "Medical treatment-related", with 28.3% of tokens and most relevant words including 'medical', 'stress', 'service', 'help', 'treatment', 'patient'.
2) "Mental symptom-related", with 37.6% of tokens and most relevant words including 'disorder', 'risk', 'symptom', 'factor', 'depression', 'anxiety'.
3) "Nursing training-related", with 34.1% of tokens and most relevant words including 'training', 'intervention', 'nurse', 'practice', 'nursing', 'learning'.

Two topics in the ReMo sample were:

1) "Intervention-related", with 50.4.6% of tokens and most relevant words including 'support', 'intervention', 'stress', 'social', 'provide', 'depression'.
2) "Career-related", with 49.6% of tokens and most relevant words including 'researcher', 'doctoral', 'group', 'supervisor', 'working', 'career'.

For the three topics in the PubMed sample, as well as for the two topics in the ReMo sample, interactive LDA visualisations and graphs were constructed (see Supplemental Materials and the code on the GitHub). These results of automated text analysis can be further used to explore the topics in detail, to select papers assigned to a specific topic, to find out which concepts prevail in the literature and which are underrepresented, etc.

Implications

As scientific research is based on accumulation and processing of previous findings, it is vital to develop effective methods of summarising the literature in the area. Machine learning methods are useful tools of inductive data-driven approach, which gives an overview of the area based on a large sample of papers; in our study, more than a thousand abstracts from PubMed papers were analyzed. It is crucial, however, to employ human experts on certain stages of analysis. In our study, the query for the PubMed sample had to be amended by the authors, while the sample collected by the ReMo experts was used without additional adjustments. Interpreting the results of machine learning methods (such as topics and graph relations) also requires domain-specific knowledge of human experts. Therefore, integration of machine learning and human expertise might be considered the most effective method of summarizing literature on mental health in academia and needs to be more widely applied in the area.

Resources

Blei, D., Ng, A. & Jordan, M. (2003). Latent Dirichlet Allocation. *The Journal of Machine Learning Research*. 3. 601-608. Retrieved from https://dl.acm.org/doi/10.5555/944919.944937

Chaney, A., & Blei, D. (2012). Visualizing Topic Models. *Proceedings of the International AAAI Conference on Web and Social Media*, 6(1), 419-422. Retrieved from https://ojs.aaai.org/index.php/ICWSM/article/view/14321

Daenekindt, S., & Huisman, J. (2020). Mapping the scattered field of research on higher education. A correlated topic model of 17,000 articles, 1991–2018. *High Educ* 80**,** 571–587. https://doi.org/10.1007/s10734-020-00500-x

Guthrie, S., Lichten, C.A., van Belle, J., Ball, S., Knack, A., & Hofman, J. (2017). Understanding mental health in the research environment: A Rapid Evidence Assessment. *Santa Monica, CA: RAND Corporation.* https://www.rand.org/pubs/research_reports/RR2022.html

Hazell, C.M., Chapman, L., Valeix, S.F. et al. (2020). Understanding the mental health of doctoral researchers: a mixed methods systematic review with meta-analysis and meta-synthesis. *Syst Rev* 9, 197. https://doi.org/10.1186/s13643-020-01443-1

Mattijssen, L., Bergmans, J. E., van der Weijden, I., & Teelken, J. C. (2021). In the eye of the storm: the mental health situation of PhD candidates. *Perspectives on medical education*, 10(2), 71–72. https://doi.org/10.1007/s40037-020-00639-4

Miranda-Jiménez, S., Gelbukh, A. & Sidorov, G. (2014). Conceptual Graphs as Framework for Summarizing Short Texts. *International Journal of Conceptual Structures and Smart Applications*. 2. 55-75. 10.4018/IJCSSA.2014070104.

Röder, M., Both, A. & Hinneburg, A. (2015). Exploring the Space of Topic Coherence Measures. *Proceedings of the eight International Conference on Web Search and Data Mining, Shanghai, February 2-6*.

Sabagh, Z., Hall, N.C., & Saroyan, A. (2018) Antecedents, correlates and consequences of faculty burnout, *Educational Research*, 60:2, 131-156, DOI: 10.1080/00131881.2018.1461573

Salimzadeh R., Hall N.C., & Saroyan, A. (2021) Examining Academics' Strategies for Coping With Stress and Emotions: A Review of Research. *Front. Educ*. 6:660676. doi: 10.3389/feduc.2021.660676

Effects of Covid-19 pandemic on female academicians' psychological wellbeing in Lithuanian HEIs and RPOs

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Purpose

The striking fact: among other occupational groups, academics rank among those with the highest levels of common mental disorders: the prevalence of common psychological disorders estimated to be between 32% and 42% among academic employees and postgraduate students, compared to approximately 19% in the general population (Kismihók et al., 2021). It can be assumed that the numbers are even higher among academic women as some studies report that women in full-time employment are nearly twice as likely to have a common mental health problem as full-time employed men (19,8% vs 10,9%) (Mental health Foundation).

Moreover, vulnerabilities, which may cause psychological disorders, have been experienced regardless of the stage of career, both among PhD students (Quijada, 2021; Woolston, 2019) and senior faculty (Lashuel, 2020; Bira et al., 2019). Significant transformations of personal and academic lives that were caused by the Covid-19 pandemic to almost all employees in research institutions even strengthened the vulnerabilities of academics (Watermeyer et al., 2021).

Furthermore, number of studies report that the Covid-19 pandemic had strong negative effects on women's lives in many countries (e.g. Alon et al., 2020; Oertelt-Prigione 2020; UN 2020). Also the studies report that women were among those for whom the Covid-19 pandemic and lockdown was particularly stressful (Christoph et al., 2020). These findings are indicative of women's vulnerability in academic environments (e.g. Bonanomi et al., 2021; Oleschuk, 2020; Ribarovskaa et al., 2021; Shalaby et al., 2021; Shen & Slater, 2021). Thus, extending this line of the studies, the paper aims to reflect on the effects of the Covid-19 pandemic related restrictions on psychological wellbeing of female academics and related institutional contexts in HEIs and RPOs in Lithuania.

The context: Research and gender in Lithuania

Lithuania is a small country with up to 3 mln. citizens and with 53% of women among them (Official Statistics Portal, 2020). As EIGE Gender Equality Index indicates, 52% of women and 62% of men were in full time employment positions and 23% of women and 17% of men were at-risk-of-poverty in 2021. Furthermore, 79% of women and 29% of men were doing cooking and/or household every day and 41% of women and 24% of men were caring for and educating their children or grandchildren, elderly or people with disabilities every day in the same year. On the other hand, 19% of women and 81% of men were members of boards in largest quoted companies, supervisory board or board of directors (EIGE, 2021).

Ministry of Education, Science and Sport leads the national science system. The system encompasses 2 national funding institutions – The Research Council of Lithuania and the Agency for Science, Innovation and Technology – and 20 HEIs (public and private) and 14 research institutes (public and private) (AIKOS, 2022). The R&D expenditure, compared to GDP, was 0,9% in 2017 and increased to 1,7% in 2020 (Official Statistics Portal, 2022).

In 2018, before the pandemic, 12036 persons were employed in HEIs. The number slightly decreased up to 11495 in 2019, the year then the pandemic started, and was 11777 in 2021. During the period, proportion of women was almost stable – 55-56% – among the employed in HEIs (Official Statistics Portal, 2022).

The study design

The presentation is based on findings of a web-based national questionnaire survey (n=891) that was carried out among women who were working in HEIs and RPOs in Lithuania in summer 2021 using the Alchemer application (Paliokaitė et al., 2022). The questionnaire was developed based on the GEAR tool methodology (ACT, 2020) and included 7 sets of questions covering such topics as gender stereotypes, gender equality in organizational cultures, institutional measures focused on gender equality, women's leadership and effects of restrictions related to the Covid-19 pandemic. The last topic was measured by 15 statements in a Likert scale ranging from 1 ("totally disagree") and 7 ("totally agree"). The statements denoted both positive (e.g. "*I had more time for writing papers*", etc.) and negative (e.g. "*I had/have less time for research*", etc.) effects of the pandemic on personal life (e.g. "*Other family members and/or close people took over part of my caring or housework commitments*",

etc.), and institutional dependence (e.g. "*The institution that I work for provided me with sufficient support*", etc.). Additionally, the respondents were asked to comment their evaluations providing their personal examples.

In this presentation, the focus is on self-evaluation of change in psychological wellbeing (the statement "*My psychological wellbeing worsened*") as an outcome of the Covid-19 lockdown and related changes in personal life and work environments as evaluated by particular statements and individual comments. In addition, we compare evaluations of individuals holding PhD and PhD students.

The analysis of the responses was carried out with the SPSS 23.0 software. It included analysis of correlation (Pearson's R) and linear regression (a stepwise method).

Results

50,2% of the respondents reported that they (absolutely) agree or more agree than disagree with the statement "*my psychological wellbeing worsened*" because of restrictions related to the Covid-19 pandemic. The percentage slightly varies among respondents who already have PhD (48,2%) and PhD students (52,5%) (Table 1).

Analysis of correlation (Table 2) shows that the self-evaluation of change in psychological wellbeing strongly interrelates with self-evaluation of change in physical condition (R_P=0,699 p<0,01), with a feeling that on-line teaching was/still is difficult psychologically (R_P=0,574 p<0,01) and a feeling that remote working was/still is difficult physically (R_P=0,547 p<0,01). Although other correlations are weaker (e.g. R_P= from –0,272 to 0,474 p<0,01), they suggest that the change in one's psychological wellbeing relate to many other aspects of personal life (e.g. increased family responsibilities) and work (e.g. postponed career advancement), including institutional efforts to ensure wellbeing of employees. More specifically, the less time the respondents had for accomplishing their research, the more significantly the respondents' productivity decreased, and the more the respondents' responsibilities for their families / intimates increased, the worse the respondents' psychological wellbeing (R_P= from 0,300 to 0,474 p<0,01).

However, more time for writing research papers and increased possibilities to participate in international research activities as well as institutional efforts to provide psychological assistance and information and support for adaptation to requirements of remote working appear

as factors positively contributing to respondents' psychological wellbeing during the pandemic. I.e. evaluations of the above mentioned factors negatively correlate with the evaluation of worsening psychological wellbeing (R_P= from –0,272 to –0,150 p<0,01).

Linear regression analysis (Table 3) shows that several factors predetermine (R^2_{Adj}=0,685) the self-evaluation of change in the well-being: deterioration of physical condition (B=0,650); on-line teaching was/still is emotionally difficult (B=0,201); significant decrease in personal productivity (B=0,138). In addition, the regression analysis suggests that the models of the well-being-worsening factors slightly differ in populations of established PhDs and PhD students, and have stronger explanatory power in the last one (respectively, R^2_{Adj}=0,669 and R^2_{Adj}=0,896). The perception of a worsening psychic condition was a significant factor predetermining worsening of psychological wellbeing in both populations (B_{PhD}=0,765 and $B_{PhDstudents}$=0,928). However, for PhD students, more time for writing research papers also contributed to improving their psychological wellbeing (B=-0,214). Meanwhile for established PhDs, in addition to worsened physical condition, emotional difficulty of teaching on-line (B=0,289), significant decrease in productivity (B=0,099), postponed promotions (B=0,093) contributed to worsening the wellbeing.

The regression analysis did not yield any institutional factors – i.e. the amount of information and support necessary for adaptation to online work, which was provided by the institution; the amount of institutional efforts striving to personalize the work place at home; sufficiency of psychological support provided by the institution – as affecting self-evaluation of psychological well-being. However, more than half of the respondents (52,4%) agreed that their employers provided sufficient information and support for them to adapt to remote working in the form of training, and respective consultations (e.g. digital tools for work). However, just 20% of the respondents agreed that their employers provided help with the equipment to make the necessary adjustment for work from home or provided psychological counselling (Table 1).

Comments to the statements indicate that some academic institutions made very few attempts (e.g. released regulations for remote working) or none to help their employees to adapt to the changed working conditions. A case was mentioned when the employer even threatened their employees that if they do not adapt to the change in the working mode, the employer will terminate contracts. The Research Council of Lithuania decided that the pandemic does not restrict the possibility to perform research and amendments to the contracts of research projects were not made. Personal and family resources were relied heavily in these conditions, e.g.

upgrading the equipment, internet connection and software. This contrasted with the different working conditions created for some respondents' spouses by private enterprises as employers. Improving the equipment would not have been a problem if salaries in the sector were higher.

Among the positive effects a quarter of the respondents totally agreed with the statement that the pandemic provided them with more opportunities to participate in international research events, and a third had more time to write academic papers. Comments from the survey state that some women in academia considered the pandemic period as the best in their career because of the flexible work schedule, free laboratories, more leisure time, possibility for self-reflection; some women got equipment for remote working for the first time in their working life.

Implications

The study findings augment previous reports on worsened psychological wellbeing of academic female employees during the Covid-19 pandemic (e.g. Pieha et al., 2020). More than half of the respondents reported that their psychological wellbeing worsened because of restrictions related to the Covid-19 pandemic and the worsening was strongly predetermined by worsening of the physical condition. Furthermore, emotional difficulties related to on-line teaching and remote working, less time for writing research papers and decreased productivity, postponed promotions contributed negatively to worsening of the psychological wellbeing. Meanwhile more time for writing research papers, psychological and informative support from the institutions had positive effect on the psychological wellbeing.

Furthermore, effects of the Covid-19 pandemic-related restrictions on the respondents' psychological wellbeing slightly varied comparing the respondents with PhD and PhD students. More specifically, more than half (52,5%) of the female PhD students who participated in the survey reported that their psychological wellbeing worsened because of restrictions related to the Covid-19 pandemic; the percentage was slightly lower among respondents who already have PhD (48,2%). Worsened physical condition had significant negative effect on psychological wellbeing in both populations, but physical difficulties related to remote working, impossibility to accomplish planned research, increased family responsibilities preventing professional activities had stronger negative effects on psychological wellbeing in the population of individuals holding a PhD. Meanwhile emotional difficulties related to teaching on-line, postponed promotion (defence of PhD theses?) had stronger negative effects

in the PhD students' population. Also, more time for research paper writing, psychological and informative support from institutions had stronger positive effects in the PhD students' population.

Thus, the findings reveal peculiarities of the pandemic effects on two categories of the academic employees – i.e. established PhDs and PhD students – and, correspondingly, suggest several lines of possible institutional interventions. Importantly, a proper physical condition of the employees is important to improve psychological wellbeing. This could be achieved by purposive education, targeted measures (e.g. trainings, collective exercising) and implementing the policies (e.g. providing ergonomic equipment in work and home working spaces). This is in line with recommendations from prior research findings on the importance of suitability and adjustment of the working environment for productivity and wellbeing (Karabulut, 2022; Rossi, 2021). In addition, particular attention should be given to issues arising from the remote working and on-line teaching. Specific trainings, flexible schedules could be part of resolutions. Finally, institutions should take responsibility for not only requiring research results, but also taking into consideration other duties and responsibilities of their diverse employees as suggested by researchers in gender studies (e.g. Utoft, 2020) as well as research integrity (e.g. Mejlgaard et al., 2020). This requires changes at national level, redefining merits in the assessment and reward processes to promote cooperation, mentoring, networking, social impact activities and teaching.

Finally, referring to other studies on the topic, further qualitative studies on the psychological wellbeing of female academic workers during critical periods could contribute to identification of the challenges associated with working from home and offer solutions (Okuyan and Begen, 2021), the ways of constructing a sense of social belonging, connectedness to a (professional, work) community and trust, the ways of ensuring spontaneous socializability and building trust in hybrid teams. In addition, quantitative studies with samples of senior faculty may help to better understand the impact of mental wellbeing (differentiating it from work wellbeing) on work-ability, and the role of self-compassion and mindfulness as a mediator.

Resources

AIKOS, 2022. https://www.aikos.smm.lt/en/Pages/Default.aspx

ACT. 2020. Gender Equality Audit and Monitoring (GEAM) Tool. https://act-on-gender.eu/nes/gender-equality-audit-and-monitoring-geam-tool

Bira, Lindsay, Evans, Teresa M, Vanderford, Nathan L. 2019. Mental health in academia. An invisible crisis. *Physiology News Magazine* 115. https://doi.org/10.36866/pn.115.32 https://www.physoc.org/magazine-articles/mental-health-in-academia-an-invisible-crisis/

Bonanomi, Andrea; Facchin, Federica; Barello, Serena; Villani, Daniela. 2021. Prevalence and health correlates of Onine Fatigue: A cross-sectional study on the Italian academic community during the COVID-19 pandemic. PLOS, https://doi.org/10.1371/journal.pone.0255181 https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0255181

EIGE, European Institute for Gender Equality. 2021. *Gender Equality Index*. https://eige.europa.eu/gender-equality-index/2021/country/LT

Karabulut, Vildan – Tasli. 2022. Remote Work: An Ally or Enemy for the Work-Life Balance? Remote Work Experiences of Male and Female Academics in the UK and Turkey During COVID-19. In Hynes, R., Aquino, C. T., & Hauer, J. (Eds.). Multidisciplinary Approach to Diversity and Inclusion in the COVID-19-Era Workplace, IGI Global, pp. 46-68.

Kismihók, Gabor et al., 2021. Researcher Mental Health and Wellbeing Manifesto. Zenodo. https://doi.org/10.5281/zenodo.5559806

Lashuel, Hilal A. 2020. Mental Health in Academia: What about faculty? eLife 9:e54551. https://doi.org/10.7554/eLife.54551 https://elifesciences.org/articles/54551

Mejlgaard, Niels et al. 2020. Research integrity: nine ways to move from talk to walk. *Nature* 586: 358-360.

Mental health Foundation. Mental health at work: statistics. https://www.mentalhealth.org.uk/explore-mental-health/mental-health-statistics/mental-health-work-statistics

Oertelt-Prigione, Sabine. 2020. The impact of sex and gender in the COVID-19 pandemic. Case study. Directorate-General for Research and Innovation, PEOPLE Directorate, Gender Sector. https://op.europa.eu/en/publication-detail/-/publication/4f419ffb-a0ca-11ea-9d2d-01aa75ed71a1/language-en

Oleschuk, Merin. 2020. Gender Equity Considerations for Tenure and Promotion during COVID-19. Canadian review of sociology 57(3):502-515. doi:10.1111/cars.12295

Paliokaitė, Agnė; Novelskaitė, Aurelija; Antanavičius, Jonas; Jotautytė. Aistė. 2022. Moterų įgalinimas aukštajame moksle. Vilnius: Asociacija „Lyderė“ [in Lithuanian] https://lydere.lt/moteruigalinimasaukstajamemokslestudija/

Pieha, Christoph; Budimirab, Sanja; Probsta, Thomas. 2020. The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria. Journal of Psychosomatic Research 136: 110186 https://www.sciencedirect.com/science/article/pii/S0022399920307480

Official Statistics Portal. 2020. Regions of Lithuania (edition 2020). https://osp.stat.gov.lt/lietuvos-regionai-2020/zmones/moterys-ir-vyrai#Gyventojai

Official Statistics Portal. 2022. R&D expenditure, compared to GDP. ttps://osp.stat.gov.lt/EN/statistiniu-rodikliu-analize?hash=0ae6c751-6f5f-4547-a307-ba64aea3650c#/

Official Statistics Portal. 2022. R&D personnel in the higher education and government sectors, https://osp.stat.gov.lt/statistiniu-rodikliu-analize?indicator=S4R006#/

Quijada, Maria Alejandra. 2021. My Mental Health Struggle in Academia: What I Wish All Business School Faculty, Students, and Administration Knew. *Journal of Management Education* 45(1): 19 –42. DOI: 10.1177/1052562920958433

Ribarovskaa, Alana K.; Hutchinsonb, Mark R.; Pittmand, Quentin J.; Pariantee, Carmine; Spencer, Sarah J. 2021. Gender inequality in publishing during the COVID-19 pandemic. Brain, Behavior, and Immunity 91:1-3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7670232/pdf/main.pdf

Rossi, Rodolfo et al. 2020. Covid 19 pandemic and lockdown measures impact on mental health among the general population in Italy. *Frontiers in Psychiatry* 11: 790.

Shalaby, Marwa; Allam, Nermin; Buttorff, Gail J. 2021. Leveling the Field: Gender Inequity in Academia During COVID-19. PS: Political Science & Politics, 54(4):661-667. doi:10.1017/S1049096521000615

Shen, Panshuo; Slater Paul. 2021. The Effect of Occupational Stress and Coping Strategies on Mental Health and Emotional WellbeingAmong University Academic StaffDuring the COVID-19 Outbreak. International Education Studies 14(3):82-95 doi:10.5539/ies.v14n3p82 https://files.eric.ed.gov/fulltext/EJ1287926.pdf

The Impact of COVID-19 on Gender Equality. Alon, Titan; Doepke, Matthias; Olmstead-Rumsey, Jane; Tertilt, Michèle. 2022. NBER Working Paper No. 26947April 2020JEL No. D10, E24, J16, J22. https://www.nber.org/system/files/working_papers/w26947/w26947.pdf

Utoft, Ea Høg. 2020. 'All the single ladies' as the ideal academic during times of COVID-19? Gender, Work and Organization 27(5): 778-787.

Woolston, Chris. 2019. PhDs: the tortuous truth. Nature's survey of more than 6,000 graduate students reveals the turbulent nature of doctoral research. *Nature* 575: 403-406. https://media.nature.com/original/magazine-assets/d41586-019-03459-7/d41586-019-03459-7.pdf doi: https://doi.org/10.1038/d41586-019-03459-7

UN – United nations. 2020. Policy Brief:The Impact of COVID-19 on Women. https://reliefweb.int/sites/reliefweb.int/files/resources/policy-brief-the-impact-of-covid-19-on-women-en.pdf

Table 1. Descriptive Statistics: Average evaluations of Covid-19 effects.

	All respondents			PhD			PhD student			No (striving for) PhD		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation	N	Mean	Std. Deviation
1. Had / have more time for writing research papers	647	3,57	2,034	423	3,51	2,044	98	3,53	1,949	112	3,86	2,088
2. Had / have less time for accomplishing my research investigations	640	4,86	1,840	420	4,95	1,851	93	4,31	1,769	114	4,91	1,822
3. It was impossible to accomplish planned research (e.g. closed laboratories, possibility to reach research participants)	579	4,18	1,969	380	4,22	1,995	77	4,03	1,739	110	4,05	2,036
4. Had more possibilities to participate in international research activities (e.g. conferences, trainings, networking)	662	3,97	1,896	424	3,90	1,881	111	4,32	1,927	113	3,90	1,932
5. My productivity decreased significantly	708	3,94	1,890	425	3,91	1,885	152	3,81	1,911	116	4,12	1,884
6. My family members and / or intimates took over part of my caring and / or housekeeping responsibilities	620	3,14	1,734	377	3,02	1,743	129	3,36	1,758	100	3,21	1,671
7. My responsibilities for the gamily and / or intimates increased so much that prevented my professional activities	659	3,56	1,933	399	3,67	1,977	142	3,25	1,873	103	3,57	1,818
8. Teaching on-line was / is difficulty emotionally	543	4,40	1,907	363	4,44	1,865	89	4,18	1,969	78	4,38	2,078
9. Remote working was / is difficult physically	682	3,71	1,887	417	3,78	1,912	143	3,37	1,806	108	3,77	1,883
10. My psychological wellbeing has worsened	718	4,21	1,889	426	4,12	1,861	160	4,19	1,912	116	4,46	2,010
11. My physical condition has worsened	718	4,22	1,903	426	4,12	1,904	160	4,19	1,891	116	4,54	1,913
12. My promotion was postponed	409	2,45	1,622	268	2,50	1,682	75	2,20	1,356	56	2,55	1,662
13. My research and study institution where I work provided me with sufficient psychological assistance (e.g. support, psychological consultations, etc.)	550	3,33	1,874	336	3,21	1,835	120	3,85	1,930	84	3,13	1,868
14. The research and study institution where I work provided enough information and support for me to adopt to requirements of remote working (e.g. trainings, consultations, etc.)	666	4,61	1,893	405	4,66	1,923	145	4,77	1,807	103	4,21	1,877
15. The research and study institution where I work has made sure that my workplace at home is adapted to my direct work (e.g. made it possible to use a work computer at home, provided other facilities)	648	3,38	2,058	401	3,35	2,054	138	3,63	2,172	97	3,14	1,963

Table 2. Analysis of correlation: Interrelations between the self-evaluation of change in psychological wellbeing and other effects of Covid-19 pandemic.

		10. My psychological wellbeing has worsened			
		All sample	**PhD**	**PhD student**	**No (striving for) PhD**
1. Had / have more time for writing research papers	Pearson Correlation	-,272**	-,280**	-,316**	-,265**
	Sig. (2-tailed)	0,000	0,000	0,002	0,005
	N	642	419	98	111
2. Had / have less time for accomplishing my research investigations	Pearson Correlation	,300**	,290**	,212*	,408**
	Sig. (2-tailed)	0,000	0,000	0,041	0,000
	N	636	416	93	114
3. It was impossible to accomplish planned research (e.g. closed laboratories, possibility to reach research participants)	Pearson Correlation	,247**	,293**	0,162	0,145
	Sig. (2-tailed)	0,000	0,000	0,160	0,132
	N	574	376	77	109
4. Had more possibilities to participate in international research activities (e.g. conferences, trainings, networking)	Pearson Correlation	-,138**	-,138**	-0,183	-0,112
	Sig. (2-tailed)	0,000	0,005	0,054	0,240
	N	657	420	111	112
5. My productivity decreased significantly	Pearson Correlation	,474**	,478**	,390**	**,557****
	Sig. (2-tailed)	0,000	0,000	0,000	**0,000**
	N	704	422	152	**115**
6. My family members and / or intimates took over part of my caring and / or housekeeping responsibilities	Pearson Correlation	0,022	0,054	-0,025	-0,025
	Sig. (2-tailed)	0,579	0,298	0,778	0,808
	N	617	375	129	99
7. My responsibilities for the gamily and / or intimates increased so much that prevented my professional activities	Pearson Correlation	,326**	,405**	0,156	,276**
	Sig. (2-tailed)	0,000	0,000	0,065	0,005
	N	657	397	142	103
8. Teaching on-line was / is difficulty emotionally	Pearson Correlation	**,574****	**,590****	**,613****	**,492****
	Sig. (2-tailed)	**0,000**	**0,000**	**0,000**	**0,000**
	N	**541**	**362**	**89**	**77**
9. Remote working was / is difficult physically	Pearson Correlation	**,547****	**,577****	**,506****	**,507****
	Sig. (2-tailed)	**0,000**	**0,000**	**0,000**	**0,000**
	N	**679**	**415**	**143**	**107**
11. My physical condition has worsened	Pearson Correlation	**,699****	**,710****	**,645****	**,733****
	Sig. (2-tailed)	**0,000**	**0,000**	**0,000**	**0,000**
	N	**716**	**425**	**159**	**116**
12. My promotion was postponed	Pearson Correlation	,276**	,288**	,337**	0,238
	Sig. (2-tailed)	0,000	0,000	0,003	0,080
	N	407	267	75	55
13. My research and study institution where I work provided me with sufficient psychological assistance (e.g. support, psychological consultations, etc.)	Pearson Correlation	-,217**	-,182**	-,283**	-,292**
	Sig. (2-tailed)	0,000	0,001	0,002	0,007
	N	547	334	120	83
14. The research and study institution where I work provided enough information and support for me to adopt to requirements of remote working (e.g. trainings, consultations, etc.)	Pearson Correlation	-,150**	-,100*	-,221**	-,228*
	Sig. (2-tailed)	0,000	0,045	0,008	0,021
	N	663	403	145	102
15. The research and study institution where I work has made sure that my workplace at home is adapted to my direct work (e.g. made it possible to use a work computer at home, provided other facilities)	Pearson Correlation	-0,026	-0,042	-0,001	0,033
	Sig. (2-tailed)	0,503	0,404	0,988	0,749
	N	644	399	137	96

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 3. Linear regression analysis: Factors predetermining worsening in psychological wellbeing e (R2Adj=0,685) the self-evaluation of change in the wellbeing.

Dependent Variable: 10. My psychological wellbeing has worsened

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,794[a]	,631	,629	1,108
2	,821[b]	,673	,671	1,045
3	,830[c]	,689	,685	1,022

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,969	,180		5,383	,000
	11. My physical condition has worsened	,771	,037	,794	20,579	,000
2	(Constant)	,419	,195		2,143	,033
	11. My physical condition has worsened	,673	,039	,693	17,127	,000
	8. Teaching on-line was / is difficulty emotionally	,224	,039	,230	5,674	,000
3	(Constant)	,160	,205		,779	,437
	11. My physical condition has worsened	,631	,040	,650	15,678	,000
	8. Teaching on-line was / is difficulty emotionally	,196	,039	,201	4,971	,000
	5. My productivity decreased significantly	,137	,039	,138	3,482	,001

Model Summary

	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
PhD	1	,765[b]	,586	,584	1,170
	2	,811[c]	,657	,653	1,067
	3	,818[d]	,668	,663	1,053
	4	,822[e]	,676	,669	1,043
PhD student	1	,928[b]	,862	,858	,624
	2	,950[f]	,902	,896	,535
No (striving for) PhD	1	,851[b]	,723	,714	1,085
	2	,890[g]	,792	,778	,956

Coefficients

	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
PhD	1	(Constant)	1,104	,218		5,066	,000
		11. My physical condition has worsened	,736	,047	,765	15,783	,000
	2	(Constant)	,431	,228		1,890	,060
		11. My physical condition has worsened	,591	,049	,615	12,105	,000
		8. Teaching on-line was / is difficulty emotionally	,294	,049	,306	6,028	,000
	3	(Constant)	,201	,244		,824	,411
		11. My physical condition has worsened	,567	,049	,590	11,544	,000
		8. Teaching on-line was / is difficulty emotionally	,299	,048	,312	6,214	,000
		12. My promotion was postponed	,116	,048	,108	2,420	,017
	4	(Constant)	,033	,255		,128	,899
		5. My productivity decreased significantly	,098	,048	,099	2,063	,041
		11. My physical condition has worsened	,546	,050	,568	10,969	,000
		8. Teaching on-line was / is difficulty emotionally	,277	,049	,289	5,672	,000
		12. My promotion was postponed	,100	,048	,093	2,074	,040
PhD student	1	(Constant)	,693	,314		2,210	,035
		11. My physical condition has worsened	,866	,062	,928	13,915	,000
	2	(Constant)	1,646	,382		4,306	,000
		11. My physical condition has worsened	,794	,057	,851	13,906	,000
		1. Had / have more time for writing research papers	-,187	,054	-,214	-3,503	,001
No (striving for) PhD	1	(Constant)	,258	,537		,481	,634
		11. My physical condition has worsened	,925	,106	,851	8,710	,000
	2	(Constant)	-1,291	,694		-1,861	,073
		11. My physical condition has worsened	,836	,098	,769	8,529	,000
		2. Had / have less time for accomplishing my research investigations	,384	,126	,275	3,053	,005

Research Yourself: Analysing the effects of Coaching Psychology among doctoral candidates

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Abstract

Recent research has shown the effectiveness of Coaching Psychology interventions as a valuable approach to support doctoral candidates' wellbeing and performance. One of the most studied constructs regarding the cognitive mechanisms by which coaching facilitates performance at the workplace is self-efficacy, but, to date, it has not been explored yet among research careers. Accordingly, the present study aimed to implement, for the first time in Spain, a coaching-psychology intervention among doctoral candidates and to assess changes in self-efficacy before and after the intervention. 20 doctoral candidates at the University of Barcelona participated in the study and were randomly assigned to 6 individual or group-format weekly sessions. Results showed very large increases in self-efficacy after the coaching sessions, independent of the intervention format (group or individual). Although further studies are needed, the present results encourage more research on the topic and suggest that coaching psychology would be an effective strategy for universities to increase

early-stage researchers' self-efficacy and, potentially, to better cope with the increasing mental health problems after the Covid-19 pandemic among doctoral candidates.

Keywords: doctoral candidates, early-stage researchers, self-efficacy, self-awareness coaching outcome, wellbeing, talent development.

Introduction

Recent research has shown the effectiveness of workplace coaching as a valuable approach to support individuals processes both in educational contexts in general (Andreannof, 2016; Bozer & Jones, 2018; Griffiths 2005) and in doctoral education in particular (Kearns, Gardiner, & Marshall 2008; Geber, 2010; Lane & Wilde, 2018; McCarthy 2012). Coaching is considered a learning and development approach that places the learner at the centre of the learning experience (Smither, 2011). Griffiths (2005) distinguishes coaching from other helping or teaching roles, including both teaching and therapy, by stating that a key characteristic of coaching is a dialectic process of reflection towards the achievement of specific goals and a commitment to planned action in a specific performance area. However, compared to the widespread use of coaching in other workplaces and organisations, the presence of the coaching approach in higher education research is relatively new and although several institutions are currently offering coaching for doctoral students (Borthwick & Wissler, 2003; Kearns et al, 2008), research is just beginning to emerge. Empirical reports have recently shown that early-stage researchers (ESR) and young academic staff are a risk population to develop stress-related disorders, and it is suggested that ESRs' mental health demands urgent attention after the Covid-19 pandemic (Byrom, 2020; Byrom et al., 2020; Cheng & Song, 2020; Cladellas et al., 2018; Johnson et al., 2020; Levecque et al., 2017; Suart, Suart & Graham, 2020; WHO, 2020; Wolston, 2019). This situation is

found in different European Universities, as several internal quality assessment reports show (University of Gröningen, 2018; Universitat Autònoma de Barcelona, 2019). Accordingly, the European Charter for Researchers (European Commission, 2011) or the European Council of Doctoral Candidates (EURODOC; Kismihók, et al., 2019) recommend that Higher Education institutions should urgently develop methods and services for ESR's career management, such as coaching programmes, in order to provide adequate support to guarantee researchers' wellbeing at their workplace and to foster their talent development. The coaching approach in higher education is mainly facilitative, with coaches having specialist knowledge on research career which is used to enable students identify actions to address the challenges they face (Morales et al. 2016). In this line, some studies provide evidence that coaching has a positive impact on academic staff within higher education to enhance academic staff career advancement, scholarly confidence, collaborative work, skills development or action planning (Roofe & Miller, 2015). However, there is limited research on the impact of coaching doctoral students specifically (McCarthy, 2012). The few studies that have explored the effectiveness of coaching in doctoral education have reported that students improve their abilities to manage their time, their self-expectations or their communication skills. These behaviours, in turn, are associated with lower stress, higher completion of their doctoral studies and higher emotional and personal wellbeing (Godskensen & Kobayashi, 2016; Kearns et al., 2008; Lane & Wilde, 2018). It was also reported that for those students who had thought about quitting their doctoral programme, coaching had influenced them to stay. Qualitative results highlight that coaching facilitates doctoral candidates to enable action, increase self-confidence and improve personal effectiveness. On the other hand, it is claimed that coaching accelerates research productivity in higher education, as it has been reported in a study

at the University of Witwatersrand, South Africa (Geber, 2010). This study demonstrated that coaching improved student-supervisor partnerships, increased participant self-awareness and contributed towards career progression, and attributed to the coaching programme an increase in tangible research outcomes, such as number of research publications, completion of research milestones and successful grant applications.

According to Bozer and Jones (2018), the cognitive mechanism that is mainly enhanced in a coaching process, and that might mediate the observed behavioural improvements, is self-efficacy, a construct that it has not been explored yet in doctoral contexts. Self-efficacy has received an important focus of attention from literature in the wider educational context, since social cognitive theory highlights self-efficacy as a central mechanism with a wide explanatory power on behavioural outcomes (Bandura, 1982; Bandura, 1986; Bandura et al., 1996). Research on self-efficacy indicates that individuals higher in self-efficacy set more challenging goals than those with lower self-efficacy and it has been shown that it is directly related to job satisfaction, greater attention and efforts to overcome failure and to succeed in work-related performance (Judge & Bono, 2001; Stajkovic & Luthans, 1998). Furthermore, it has been reported that self-efficacy is a strong predictor of motivation, engagement behaviour and performance (Choi, Price, & Vinokur, 2003; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). Self-efficacy has also been found to be related to improved self-awareness and responsibility, improved self-reported job performance (Bozer, Sarros, & Santora, 2013), and transformational leadership (MacKie, 2015) and it is considered as an important coaching outcome (Baron, Morin, & Morin, 2011; Grant, 2014; Grant, 2017; Moen & Federici, 2012; Tooth, Nielsen, & Armstrong, 2013). Accordingly, it is suggested that the study of self-efficacy in coaching studies is an

urgent priority given its relevance in all educational processes and its associations in performance and wellbeing outcomes (Bozer & Jones, 2018).

Accordingly, the aim of the present study was twofold. On the one hand, it aimed to implement, for the first time, an intervention based on Coaching Psychology in Spanish Doctoral Studies (Consejo General de Psicología de España, 2014; Reche et al., 2014). On the other hand, it aimed to assess, also for the first time in doctoral settings, to what extent this intervention improved self-efficacy, considered a central cognitive mechanism by which coaching mediates behavioural performance and wellbeing among doctoral candidates. Therefore, based on previous studies, it was hypothesized that participants of the coaching programme would increase their self-efficacy after the coaching process.

Method

Design and procedure

A pre-post study was designed to analyse the coaching intervention effectiveness in doctoral students' self-efficacy. To recruit participants, researchers called the intervention "Research Yourself" and chose randomly one of the 8 Universities located in Barcelona city and surroundings. The final university that was chosen was the University of Barcelona. Researchers contacted the doctoral school managers by email and explained the aim and design of the study and offered the coaching intervention for free to the university as a pilot study. The managers and ethical committee of the university approved the protocol and PhD students from University of Barcelona were recruited via email. Participants were informed that their participation would be

voluntary and that the treatment of their data would be anonymous and would not be used by their supervisors or research staffs. In this email, doctorate students were invited firstly to assist to an informative session where contents and timing of the Coaching Program were summarized. Finally, this kick-off session had 80 assistants (verified by signature). Twenty PhD's students from these 80 were selected for participating in the Coaching Program and the pre-post pilot study. The criteria selection was attendance to the kick-off session and accepting to receive pilot coaching sessions. In addition, as inclusion criteria, it was also taken into account candidates' explicit commitment to the coaching process and their perceived need for a change measure with a minimum of 8/10 points answering two questions 1) How do you think it is necessary for you to make a change in the way you are coping your doctorate? and 2) Level of commitment on participating in a coaching process working with a psychologist-coach at University of Barcelona Alumni Headquarters 1 session of 1 hour fortnightly. Applying this selection criteria, the participants were reduced to 34 doctoral students and a final sample of 20 students finally committed to Coaching Program timing. Participants were randomly assigned to group (n=10) or individual coaching (n=10). Both options consisted in 6 coaching sessions, but the former was delivered individually (one to one sessions) and the latter was delivered in a group. The sessions were conducted by four different coaches-psychologists offering 6 individual one-hour sessions duration for 10 PhD candidates and 6 coaching group sessions of one-hour and a half duration for the other 10 remaining candidates. Sessions took place in different classrooms and offices of Alumni Headquarters of University of Barcelona and in the Faculty of Philosophy at University of Barcelona. All participants consented to collaborate voluntarily and provided informed consent before participating in the study.

Coaches were selected through a voluntary call among trained psychologist at the Coaching Psychology Section of the Col·legi Oficial de Psicologia de Catalunya (COPC; Catalan Official Psychology Association).

Participants

20 Doctoral Candidates between 24 and 50 years old participated in the study, with a 75% of female representation. A 30% of participants were from Life-Science fields, another 30% of Social Sciences, followed by Humanities (20%), Health Sciences (15%) and Engineering (5%) (see Table 1).

Instruments

The Spanish version of the Self-Efficacy General Scale (SEGS; Schwarzer, 1993) was administered. This scale has been validated in different cultural backgrounds and it is considered a reliable tool for measuring self-efficacy in organizational research (Chen, Gully & Eden, 2001; Luszczynska, Scholz, Schwarzer, 2005). Self-efficacy (Bandura, 1977,1992) refers to the feeling of confidence in one's own abilities to properly manage daily life situations. People with low self-efficacy levels tend to show lower self-esteem and negative feelings on its capacity, while high self-efficacy facilitates positive thoughts related to oneself, acting these thoughts as motivators of action and facilitating self-esteem or the achievement of more challenging goals (Sanjuán Suárez, Pérez García, y Bermúdez Moreno, 2000). Cross-cultural studies have shown a good internal consistency (Sanjuán, Suárez, Pérez García y Bermúdez Moreno, 2000; Schwarzer, 1993) and the psychometric properties of the Spanish adaptation show similar results, with a high internal consistency and a considerable predictive value, which guarantee its usefulness in psychological studies about performance, health and educational

processes. Internal consistency for the present sample was also adequate, with Cronbach's $\alpha = 0.83$.

Statistical analyses

Means (standard deviations) and frequencies (percentages) were calculated for the socio-demographics. To analyse changes in self-efficacy after the intervention, the nonparametric Wilcoxon signed-rank test was used. Repeated-measures ANOVA was also performed to explore whether the format of coaching intervention (individual vs. group) had a differential effect on self-efficacy. A 5% significance level was adopted in all two-tailed tests. For a more precise interpretation on the relevance of the results in each assessed domain, effect sizes for pre-post changes were calculated using Cohen's *d* according to Morris and DeShon's (2002) equation (rule of thumb for Cohen's *d*: 0.2 = small, 0.5 = medium, and 0.8 = large effect sizes. Statistical analyses were conducted using the SPSS 25.0 statistical package.

Results

Sociodemographics are reported in Table 1. Statistically significant differences in self-efficacy were found in pre-post variations after the coaching intervention in both groups (see Table 2). Significant increases were observed in the total sample (Z = -3.294; p = .000), with a very large effect size ($d = 1.66$) and remained statistically significant after Bonferroni correction. No statistically significant difference regarding change in self-efficacy scores was found between the two types of intervention (individual vs. group) ($F = .633$; $p = .437$). Although not significant, larger effect sizes were obtained in group intervention ($d = 2.13$) while individual intervention showed a smaller but still large effect size ($d = 1.54$).

Table 1. Baseline characteristics of the participants.

	Study sample (*n*= 20)
Sociodemographics	
Gender	
Women	15 (75%)
Men	5 (25%)
Age, M (SD)	34.7 (7.25)
Working status	
Working and PhD studying	12 (60%)
Only PhD studying	8 (40%)
Area of study	
Social Sciences	6 (30%)
Humanities	4 (20%)
Health Sciences	3 (15%)
Life Sciences	6 (30%)
Engineering and Arquitecture	1 (5%)

Table 2. Pre-post changes in self-efficacy Scale.

	Pre Mean (SD)	**Post Mean (SD)**	***Z***	***p-value***	***d***
Individual sessions (n=10)	23.40 (9.18)	33.90 (2.80)	-2,809	.005	1.54
Group sessions (n=10)	27.30 (4.47)	35.10 (2.60)	-2,805	.005	2.13
All participants (n=20)	25.35 (7.30)	34.50 (2.70)	-3.294	.000	1.66

4. Discussion and conclusions

The aim of the present pilot study was to preliminarily analyse the effectiveness of a Coaching Psychology programme in terms of self-efficacy among doctoral candidates for the first time in a Spanish University. The present results show how participants in both coaching programmes -individual and group formats- experienced a statistically significant and large increase in self-efficacy scores after participating in the coaching programme, aligning with previous studies reporting the effectiveness of coaching in other workplace contexts (Bozer & Jones, 2018). Although the observed increase was

higher in the group intervention, differences regarding the individual intervention did not reach statistical significance, suggesting that both coaching modalities are equally effective. The present results might help behavioural researchers understand how coaching increases self-confidence, performance or personal effectiveness (Geber, 2010; Lane & Wilde, 2018). Self-efficacy increases observed in the present study might also help explaining the effectiveness of coaching in doctoral education, as a central cognitive mechanism that might facilitate individuals' abilities to manage self-expectations and personal goals towards wellbeing and performance. It could also help understanding previous results showing higher productivity, completion rates of doctoral studies and higher emotional and personal wellbeing in those students that go through a coaching process (Geber, 2010; Godskensen & Kobayashi, 2016; Kearns, Gardiner, & Marshall, 2008; Lane & Wilde, 2018). Therefore, and given the relevance of self-efficacy as a central cognitive mechanism in academic and professional performance (Bandura, 1986; Bozer & Jones, 2018), it is suggested that coaching psychology programmes -both individual and group- might be an effective psychoeducational intervention to increase academic motivation, engagement and performance (Choi, Price, & Vinokur, 2003; Judge & Bono, 2001; Stajkovic & Luthans, 1998; Tannenbaum, Mathieu, Salas, & Cannon-Bowers, 1991). Accordingly, results of this pilot study encourage more applied research of Coaching Psychology among doctoral studies to analyse its effects in academic motivation and in objective indicators of performance (Bozer, Sarros, & Santora, 2013).

Nevertheless, the present results should be interpreted with caution, since changes in self-efficacy do not necessarily be indicative of other short and long-term academic outcomes to be tested in further studies, such as stress levels, student-supervisor partnership, career progression or research outcomes such as number and quality of

publications (Geber, 2010; Lane & Wilde, 2016). Several limitations of the present study should be acknowledged: firstly, and the most important, the reduced sample size might be unrepresentative of general doctoral population and limits the generalizability of our findings. Secondly, the lack of control group makes impossible to draw meaningful conclusions from the study as an uncontrolled design impedes the possibility of attributing the observed beneficial effects of the coaching process in ESR's self-efficacy. On the other hand, it is necessary to highlight the fact that this study has only evidenced short-term transitory effects. Accordingly, more research should be carried using larger coaching programmes and measure the duration of these effects and their transfer to daily life in among doctoral students, including follow-up assessments.

In any case, this pilot study encourages the implementation and further research on the effectiveness coaching programmes among doctoral studies as an educational strategy to overcome the PhD crises (Cladellas et al., 2018; Wolston, 2019), worsened by the Covid-19 pandemic that has hardly hit Spanish and European universities and their ESRs. Accordingly, coaching programmes could help enhancing researchers' self-efficacy, and thus their psychological wellbeing and performance through cost-effective interventions, such as coaching-group sessions. This strategy could be a relevant teaching and learning innovation for those universities committed with their community and willing to foster researchers' talent development, upskill research staffs in wellbeing, avoid academic burnouts and doctoral withdrawals. Furthermore, it could be considered as a cost-effective psychoeducational strategy for mental health prevention among research staffs who are a risk population for developing stress-related disorders after the Covid-19 pandemic (Byrom, 2020; Byrom et al., 2020; Cheng &

Song, 2020; Cladellas et al., 2018; Johnson et al., 2020; Levecque et al., 2017; Suart, Suart & Graham, 2020; WHO, 2020; Wolston, 2019).

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References

Andreanoff, J. (2016). Issues in conducting quantitative studies on the impact of coaching and mentoring in Higher Education. *International Journal of Evidence Based Coaching & Mentoring*, *10*, 202-2016.

Ashton, P., & Pintor-Escoba, L. (2020). Five ways to tackle PhD research anxieties triggered by COVID-19 lockdowns. *Nature Career Column*. https://www.nature.com/articles/d41586-020-01898-1

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review,* 84, 191-215.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American psychologist*, *37*(2), 122.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of social and clinical psychology*, *4*(3), 359-373.

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, *67*, 1206-1222.

Bandura, A. (1992). Exercise of personal agency through the self-efficacy mechanism. En R. Schwarcer (Ed.), Self-efficacy: Thought control of action (pp.:3-38). Washinton, DC: Hemisphere.

Baron, L., Morin, L., & Morin, D. (2011). Executive coaching: The effect of working alliance discrepancy on the development of coachees' self-efficacy. *The Journal of Management Development*, *30*(9), 847-864.

Borthwick, J. & Wissler, R. (2003) Postgraduate students and generic capabilities: Online directions. Retrieved March 1, 2012, from http://www.dest.gov.au/sectors/research_sector/publications_resources/profiles/postgrad_students_workplace.htm

Bozer, G., & Jones, R. J. (2018). Understanding the factors that determine workplace coaching effectiveness: A systematic literature review. *European Journal of Work and Organizational Psychology*, *27*(3), 342-361.

Bozer, G., Sarros, J. C., & Santora, J. C. (2013). The role of coachee characteristics in executive coaching for effective sustainability. *Journal of Management Development*, *32*(3), 277-294.

Byrom, N. (2020). COVID-19 and the Research Community: The challenges of lockdown for early-career researchers. *Elife*, *9*, e59634.

Byrom, N. C., Dinu, L., Kirkman, A., & Hughes, G. (2020). Predicting stress and mental wellbeing among doctoral researchers. *Journal of Mental Health*, 1-9.

Cladellas-Pros, R., Castelló-Tarrida, A., & Parrado-Romero, E. (2018). Satisfacción, salud y estrés laboral del profesorado universitario según su situación contractual

[Satisfaction, Health and work-stress among university staff according to their contractual situation]. *Revista de Salud Pública*, *20*, 53-59.

Cheng, C., & Song, S. (2020). How early-career researchers are navigating the Covid-19 pandemic. *Molecular plant*, *13*(9), 1229. https://doi.org/https://doi.org/10.1016/j.molp.2020.07.018

Choi, J. N., Price, R. H., & Vinokur, A. D. (2003). Self‐efficacy changes in groups: effects of diversity, leadership, and group climate. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *24*(4), 357-372.

Consejo General de Psicología en España. (2014). Entrega de los Premios en Psicología Coaching 2014. Infocop Online http://www.infocop.es/view_article.asp?id=5416

European Comission. (2011). Wellbeing in 2030. Retrieved from https://ec.europa.eu/commfrontoffice/publicopinion/archives/quali/wellbeing_interim_en.pdf

Griffiths, K. E. (2005). Personal coaching: A model for effective learning. *Journal of Learning Design*, *1*(2), 55-65.

Godskesen, M. and Kobayashi, S. (2015) 'Coaching doctoral students – a means to enhance progress and support self-organisation in doctoral education', Studies in Continuing Education, 38(2), pp.145-161. DOI: https://10.1080/0158037x.2015.1055464

Grant, A. M. (2014). The efficacy of executive coaching in times of organisational change. *Journal of Change Management*, *14*(2), 258-280.

Grant, A. M. (2017). Solution-focused cognitive–behavioral coaching for sustainable high performance and circumventing stress, fatigue, and burnout. *Consulting Psychology Journal: Practice and Research*, *69*(2), 98.

Johnson, M.C,, Saletti-Cuesta, L.,& Tumas, N. (2020). Emociones, preocupaciones y reflexiones frente a la pandemia del COVID-19. *Ciência & Saúde Coletiva* [online]. 2020, v. 25, suppl 1, pp. 2447-2456.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of applied Psychology*, *86*(1), 80.

Kearns, H., Gardiner, M., & Marshall, K. (2008). Innovation in PhD completion: The hardy shall succeed (and be happy!). *Higher Education Research & Development*, *27*(1), 77-89.

Kismihók, G. et al. (2019) Declaration on Sustainable Researcher Careers. Brussels: Marie Curie Alumni Association and European Council of Doctoral Candidates and Junior Researchers. DOI: https://10.5281/zenodo.3082245

Geber, H. (2010). 'Coaching for Accelerated Research Productivity in Higher Education', *International Journal of Evidence Based Coaching and Mentoring*, *8*(2): 64–79.

Lane, L. G., & De Wilde, J. (2018). The impact of coaching doctoral students at a university in London. *International Journal of Evidence Based Coaching and Mentoring*, *16*(2), 55-68.

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, *46*(4), 868-879.

Luszczynska A, Scholz U, Schwarzer R. (2005) The general self-efficacy scale: multicultural validation studies. *The Journal of Psychology.* Sep;139(5):439-57.

McCarthy, G. (2012). The case for coaching as an approach to addressing challenges in doctoral supervision. *International Journal of Organisational Behaviour, 17*(1), 15-27.

MacKie, D. (2015). The effects of coachee readiness and core self-evaluations on leadership coaching outcomes: A controlled trial. *Coaching: An International Journal of Theory, Research and Practice*, *8*(2), 120-136.

Moen, F., & Federici, R. A. (2012). The effect from coaching based leadership. *Journal of Education and Learning*, *1*(2), 1-14.

Morales, D. X., Grineski, S. E., & Collins, T. W. (2017). Faculty Motivation to mentor students through undergraduate research programs: A study of enabling and constraining factors. *Research in Higher Education, 58(5), 520–544*.

Reche, E., Farnés, M., Duran, M. & Bajona, C. (2014). Research Yourself: Coaching for Doctoral Candidates. https://www.educaweb.com/premios/proyectos/uploads/pdf/2015_016.pdf

Rodríguez, J. C. M., & Rodríguez, F. M. M. (2016). Revisión de publicaciones sobre coaching educativo y professional [Review of Publications about educational and professional Coaching]. In *Variables Psicológicas y Educativas para la intervención en el ámbito escolar: Volumen II* (pp. 149-156). Asociación Universitaria de Educación y Psicología (ASUNIVEP).

Roofe, C. G., & Miller, P. W. (2015). Mentoring and Coaching in Academia: Reflections on a Mentoring/Coaching Relationship. Policy Futures in Education, 13, 479-491. https://doi.org/10.1177/1478210315578562

Sanjuán Suárez, P., Pérez García, A. M., & Bermúdez Moreno, J. (2000). Escala de autoeficacia general: Datos psicométricos de la adaptación para población española

[The general self-efficacy scale: Psychometric data from the Spanish adaptation]. *Psicothema, 12* (Suppl2), 509–513

Schwarcer, R. (1993). Measurement of perceived self-efficacy. Psychome - tric scales for cross-cultural research. Berlin: Freie Universi

Smither, J. W. (2011). Can psychotherapy research serve as a guide for research about executive coaching? An agenda for the next decade. *Journal of Business and Psychology*, *26*(2), 135-145.

Suart, C., Suart, T. N., & Graham, K. (2020). When the Labs Closed : Graduate Studentsand Postdoctoral Fellows ' Experiences of Disrupted Research During the COVID-19 Pandemic, preprint. https://doi.org/https://doi.org/10.21203/rs.3.rs-59050/v1

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*(2), 240.

Tannenbaum, S. I., Mathieu, J. E., Salas, E., & Cannon-Bowers, J. A. (1991). Meeting trainees' expectations: The influence of training fulfillment on the development of commitment, self-efficacy, and motivation. *Journal of applied psychology*, *76*(6), 759.

Tooth, J. A., Nielsen, S., & Armstrong, H. (2013). Coaching effectiveness survey instruments: Taking stock of measuring the immeasurable. *Coaching: An International Journal of Theory, Research and Practice*, *6*(2), 137-151.

Universitat Autònoma de Barcelona. (2019). Doctoral studies improvement. Internal report. Universitat Autònoma de Barcelona.

University of Gröningen. (2018). Wellbeing survey. Retrieved from https://www.rug.nl/education/phd-programmemememes/about/phd-survey/wellbeing-2018.pdf

Wolston, C. (2019). PhD poll reveals fear and joy, contentment and anguish. *Nature, 575*, 403-406.

World Health Organization (WHO). (2020). Mental health and psychosocial considerations during the COVID-19. World Health Organization Publications. Available at: https://outbreakWHO/2019-nCoV/MentalHealth/2020.1

The Third Half: creating healthy and supporting research environments at the Autonomous University of Barcelona

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Abstract

It is suggested that early career researchers' (ECRs) are a risk population to develop mental health problems related to stress, burnout or anxiety and depression. In response to this alarming situation and following the European Research Area policies regarding researchers' wellbeing, the Autonomous University of Barcelona (UAB) started working towards the creation of mentally healthier research environments, since a 50% of doctoral candidates showed anxiety and a 45%, moderate to severe symptoms of depression after the Covid-19 pandemic. The Social Responsibility Unit and the Doctoral School contacted the Core Mental Health Unit and coordinated local research teams working on wellbeing promotion to design and implement action plans towards mental health prevention at the UAB. Among other actions, an innovative prevention program was designed and tested among ECRs: the Third Half. The name refers to a rugby tradition in which the players meet after the match in a more informal environment to spend some more time together with the rivals and colleagues having a drink and promoting friendship and fair play. It was framed within the motivational model of self-determination and the humanistic principles of education, where unconditional acceptance is a key principle of the learning process. The activity was announced in the UAB's website and an e.mail was sent to all Ph.D. candidates to ask for participation. Although 80 ECRs applied for the activity in only 5 days after its announcement, just 25 could participate in the pilot study. It consisted in six gamified outdoor sessions of 3 hours each, delivered once a month in outdoor-green spaces, and guided by 2 researchers-psychologists specialized in gamification, coaching and Positive Psychology. A pre-post design of repeated measures showed significant increases in almost all motivation and wellbeing indicators, while significant decreases in anxiety and negative affect were also obtained. Internal quality assessment showed that participants' satisfaction levels with the intervention were very high. Given these positive results, the Doctoral School will implement the Third Half as a permanent and cost-effective activity next academic year 2022-23 with the collaboration of specific units of training, research and intervention on wellbeing and mental health. The goal is to implement ERA policies by involving and rewarding local researchers, able to facilitate knowledge transfer on wellbeing interventions and to ultimately create healthier and more supporting research environments at the UAB.

Keywords: mental health; wellbeing; early career researchers; institutional interventions; positive psychology

Introduction

Over the last few years, various reports have shown evidence of the worsening well-being and mental health among Ph.D. and early career researchers (ECR) working in the European Research Area (ERA; Kismihok et al., 2021, 2022). Although the data indicates that the young researchers are very satisfied and motivated by their learning process, the data also shows that before the COVID-19 pandemic, between 32% and 42% of ECRs were at risk of developing mental health problems, being depression, anxiety, burnout or cognitive exhaustion, the most frequent disorders among the academic community, who present a higher risk than the general population of suffering mental health complications (Lau & Pretorious, 2019; Sorrel et al., 2020). It is estimated that the number of doctoral students with mental illness is 2.84 times higher than the number of adults with a high level of education in general. (Levecque et al., 2017). This trend has also been seen in Catalan universities, where research staff with temporary contracts have worse physical and mental health, more stress symptoms, and are less satisfied with their jobs than both full-time professors and researchers with stable contracts (Cladellas et al., 2018). A situation that has worsened during the COVID-19 pandemic (Naumann et al., 2022; Pyhältö et al., 2022), also in Catalan universities (Sanz, 2022), where a 45% of the academic community presents anxious-depressive symptoms, a prevalence that is 9 points higher than in the general population. In line with previous studies, the incidence among undergraduate and post-graduate students is the highest (54%), compared to permanent teaching and research staff (25%). Recently, another study at the Autonomous University of Barcelona (UAB) has confirmed this alarming data (Muro et al., 2022), indicating that a 47% of ECRs are at risk of suffering anxious disorders, while a 45% shows moderate to severe clinical depressive symptoms. This situation follows the European tendency (Kismihok et al., 2021), and calls for research staffs, institutions, funding bodies, stakeholders, and governments to work together to overcome the so-called "Ph.D. crisis" and encourage investments in promoting healthier research careers that enhance the wellbeing, not only of doctoral students, but of the entire research, and academic community (Evans et al., 2018; Guthrie et al., 2017; Lau & Pretorius, 2019; Levecque et al., 2017; Woolston, 2017). Most university research outcomes and excellence levels depend on the work and contributions of ECRs who often represent more than 50% of university teams (Horta et al, 2018; Johnson et al., 2020; Norton et al., 2018) and play a fundamental role in

economic growth, innovation and the advancement of knowledge in universities and countries of the European Union (OECD, 2019). Although future doctors will be highly qualified professionals who will work in research centres, R&D companies, governments and administrations, and will be key personnel to find solutions and make decisions on political, technical, social, and medical issues, their technical specialization and the development of their talent primarily depend on competitively funded projects, creating a professional uncertainty not seen in other labour sectors. A recent example is the COVID-19 pandemic, during which thousands of young researchers from many fields are still developing strategies and innovations for the discovery of new vaccines, for the reconstruction of economies, health systems and social support structures worldwide. Despite this specialisation, low salaries, contractual uncertainty, the workload and complexity of the work, the high level of specialization required and job insecurity, added to the pressure to publish or the lack of institutional support or funding to lead projects, end up taking a toll on both their professional performance and their mental health (Kismihok et al., 2022; Lau & Pretorius, 2019; Skopek et al., 2022; van Rooij et al., 2021). This situation leads to significant academic dropouts (Castelló et al., 2017), indicating how, in Spanish universities, a third of active doctoral students drop out of doctoral training. However, it is estimated that, on an international level, the current dropout prevalence ranges from 50% to 70%, and in some cases, it has been observed that only 10% complete doctoral training (van Rooij et al., 2021). The main reasons point to the difficulty of reconciling doctoral studies with personal and professional life (25%) and to social isolation, demotivation or lack of institutional support (40%) (Castelló et al., 2017; Skopek et al., 2022).

For these reasons, the creation and implementation of psychoeducational programs to promote wellbeing and the talent of young researchers in doctoral studies is a strategic priority for the ERA and a long-sought demand by the entire community of European and international Ph.D. students (EURODOC, 2021; Kismihók et al. 2022; Metcalfe et al., 2022; O'Neill & Schroijen, 2018; Remo, 2021). These interventions and prevention programs should offer cost-benefit strategies that a) facilitate their well-being and optimal psychosocial development, and that b) improve their motivation to reduce the risks associated with the dropout rates of the research career. But while it is necessary to promote and generalize psychoeducational programs that complement technical training to reach more optimal health levels and professional excellence, it is first necessary to

create synergies of institutional collaboration and coordinate administrative teams, professors and researchers to implement actions at a local level. These actions should promote and guarantee more motivating and healthy research environments in order to improve upskilling in well-being and health, institutions' cohesion, teamwork and psychosocial support, emotional regulation of stress and burnout, and, ultimately, to improve the organizational culture and working climate where young researchers develop (Castelló et al., 2017; Metcalfe et al., 2022; OMS, 2020; ReMo, 2021; Sorrel et al., 2020).

While it is true that European and institutional policies are slowly reorienting doctoral training, more regional and local investments are needed in order to implement sustainable services that favour the well-being and development of researchers in their workplace. These training services are not yet widespread in the ERA, in part because their implementation depends mostly on grants and projects to implement these changes (Kismihok et al., 2021, 2022). Therefore, the implementation of these policies at the local level is a challenge for the entire research community and should go a step further: university managers at the local level should invest in prioritizing psychoeducational services within the doctoral programs (with the collaboration of research teams and specialized professors from each university) to work together to build healthier research environments and learning environments that are more motivating and favourable for the well-being and global development of young researchers (ReMo, 2022).

In this context of implementing welfare and mental health policies, it is worth noting the efforts at the UAB, one of the main public universities in Catalonia and Spain, recognized with the distinction of "HR Excellence in Research". During the last few years, following the guidelines of the European Charter and the Code of Conduct (European Commission, 2021), different administration teams at the UAB have been working on the implementation of services aimed at improving the well-being, motivation and development of researchers. The creation of a specific Social Responsibility unit that works to promote improvements toward a Sustainable and Healthy Campus (UAB, 2022a), has implemented several actions that, in collaboration with other units such as the CORE in Mental Health (UAB, 2022b) have facilitated the coordination of specific actions between various teaching and research teams specialized in promoting health and emotional well-being. This type of intervention is a

top priority for European university policies that try to meet the goals for sustainable development set by the UN and the WHO (UN, 2022; WHO, 2022).

In this framework of institutional collaboration at the UAB, and in response both to the alarming data on mental health in doctoral students and to the European policies to promote well-being in universities, the Social Responsibility Unit, the Doctoral School and the Unit of Coaching and Support for Academics (UAB, 2022c) started working together to promote, in the 2021-22 academic year, various actions to promote emotional well-being. One of them was specifically designed as a pilot action to improve the well-being and psychosocial support of doctoral students: the Third Half (UAB, 2022d).

Methods

In October 2021, the Social Responsibility- Campus SIS unit and School of Doctorate contacted the CORE Mental Health Unit to meet those teams and researchers experts in the promotion and design of mental health prevention and wellbeing programs in educational settings. From the various research teams and teachers contacted at the UAB Campus, a response was obtained from the UCAA (UAB, 2022c). It was agreed to design and implement a psycho-educational action to increase the well-being, motivation and mental health of ECRs as a pilot study during the second semester of the 2021-22 academic year: the Third Half.

Design and procedure

Originally, the *Third Half* refers to a moral tradition in rugby and sports, where at the end of the match, rivals gather to share some time together and have a drink or eat something, as an excuse to fraternize and ease any resentment that could have arisen during the match. The Third Half is as important or more important than the match itself, because it is where the players learn to manage their emotions, respect their rivals and teammates, and thus manage the hostilities that the game has produced for them, establishing cordial relationships and friendship as a result of their shared experience in this sport. With the same purpose, the UCAA adapted this practice for the design of the psychoeducational intervention for doctoral students by hosting monthly meetings between doctoral students at the UAB Campus.

Characteristics:

Frequency and duration: 6 monthly sessions of 3 hours each (from February to July).

Structure: The first 2 hours consist in activities aimed at promoting well-being in outdoor spaces on the Campus and the third hour - more informal - aims to facilitate social connection and peer support by having a drink or a snack in one of the bars or cafes of the UAB.

Trainers: Ph.D. psychologists and specialists in motivation and academic well-being. For this pilot study, there was a full-time professor, Ph.D. specialist in Positive Psychology and Coaching that designed and lead the activity with the collaboration of the Doctoral program in Health and Sports Psychology (UAB, 2022e), that chose and facilitated a doctoral candidate and psychologist specialized in gamification, to give support both in the design of the activity and its implementation. This Ph.D. candidate acted as a peer-mentor, while the professor acted as a coach and coordinated all the activity with the participants and UAB units involved. Both trainers had to speak English in case there were international ECRs. The coach also contacted the ReMO researchers at the UAB (ReMO, 2021) to inform and invite them to participate in the activity. One ReMO researcher participated in some sessions of the activity and was included in the participating group.

Objectives: 1) to increase motivation and emotional well-being and 2) to improve psychosocial and institutional support and reduce risks associated to mental health complications in UAB doctoral students.

Method: to create a space and time to play, talk and reflect among peers and facilitate the connection between doctoral students, creating an informal environment that is more motivating and emotionally healthy, without adding more workloads or stress to the participants. It was designed to be delivered in Catalan, Spanish and English once a month.

Criteria for the design of the activity: The design of the activity followed the criteria of the World Health Organisation (2022) and the ReMO's (2022) peer-mentoring recommendations. However, given that the teaching and research team of the UCAA is specialized in the promotion of well-being, the prevention of mental health and in the development of talent (UCAA, 2022), additional criteria were included to design this psychosocial support action for UAB doctoral students.

The 5 main criteria for the design of Third Half were the following:

1- **Gamified activities** (Huan & Soman, 2013; Kiriakova et al., 2014; Nah et al., 2018). Gamification is a strategy for applying game principles, defined as the integration of game elements into non-game activities, using mechanics, aesthetics, and thinking to engage people, motivate action, and promote learning and problem solving in a funny way (Kapp, 2012). It is effective in educational processes (Manzano-León et al., 2021) by improving motivation and learning in formal and informal conditions.

2- **Outdoor activities and green spaces** (Gilbertson et al., 2022; Muro et al., 2022). Outdoor learning, defined as "that which lies beyond the walls of the interior", has been shown to provide more meaningful, deep and stimulating learning experiences that facilitate interest and motivation to learn. It is often considered that outdoor learning can provide opportunities in many subjects and also support students' personal, social and emotional development. On the other hand, it has also been shown that exposure to green and natural environments immediately facilitates relaxation and emotional well-being, and therefore promotes the comprehensive health of individuals. The location of the Third Half alternated different outdoor and green spaces of the Campus: the Central Axis-Campus SIS, the Knowledge Square, the Agora of the Auditorium of the Faculty of Arts and Philosophy and different green spaces between the Faculties of Sciences and Social Sciences.

3- **Positive Psychology and Coaching applied in Educational Settings** (Grant, 2008, 2022; Green & Norrish, 2013; Muro et al., 2018; Palmer & Whybrow, 2008; Vázquez & Hervás, 2018; Whitmore et al., 2013). The activity was framed within the framework of Positive Psychology applied in education for the prevention and promotion of psychological well-being. We used exercises specific to interventions based on Positive Psychology targeted at the academic non-clinical population such as practising gratitude, savoring, acceptance or mindfulness. Techniques widely used in Coaching Psychology and specific to Education were also used, such as Socratic maieutic or asking questions and conversations towards improvement and growth, setting goals with the Grow method, or the visualizations applied to personal improvement and coping with life crises.

4- **Physical activity** (Pallarès et al., 2020; Tyson et al. 2010). It is well known that the practice of a physical activity is a protective factor for mental health at all stages of development and especially for students. It has been shown how a lack of physical activity worsens health, both physical and mental, and is considered a key cost-benefit strategy in policies to promote well-being. Although the goal was not to make a physical activity training program, typical games that encourage behavioural activation, as those played in the school yards, teamwork and cooperation were proposed, such as: passing the ball, handkerchief game, relays, etc.
5- **Peer mentoring and peer support** (Kismihok et al., 2022; Lorenzetti et al., 2019). In conventional mentoring, the student is matched with someone more senior in the organization or who has more experience in a particular area of interest. There is often an expectation of professional development. In peer mentoring, the mentor is usually someone with a similar background, just a little more advanced academically, and who can bring an alternative perspective to the career path. The additional social support that allows the student to share their worries, concerns or conflicts also facilitates their performance and emotional well-being, while fostering bonds of friendship between the participants. The mentor offers space and time for reflection and dialogue, listens and guides; collective mentoring, it also facilitates peer connection and diminishes feelings of social isolation, promoting a shared learning experience that simultaneously facilitates identification with others, friendship, altruism and mutual aid.

Finally, it should be noted that all the activity was framed within the motivational model of self-determination (Ryan & Deci, 2000) and the humanistic principles of education, where unconditional acceptance or non-judgment are key principles for learning processes (Khatib et al., 2013; Rogers, 1985; Sharp, 2012; Stober, 2006; Treve, 2021).

To read a more detailed description of each session, see the Third Half: Design and Implementation booklet (Muro & Bonilla, 2022).

Design and procedure

On January 25, 2022, a call was made for participation in the Thid Half, announcing it in the UAB's website activity on the UAB website and sending an email to all Ph.D. students of the UAB Campus through the mailing list of the School of Doctorate. In just

5 days, 80 applications were obtained, but only 40 Ph.D. students could be registered, according to the human resources available to implement this pilot study.

Participants answered a battery of questionnaires designed to know and contrast their levels of emotional well-being and motivation before and after starting the activity. The pre-survey made it possible to contrast the profiles of the participants with a sample of doctoral students who did not participate in the third time to find out if they were comparable to the rest of the doctoral students at the UAB. An item was also included to identify the possible presence of chronic or serious pathologies, and thus to be able to adapt the activities in case of having Ph.D. students with functional diversity or other significant disorders that affected mobility. On the other hand, the results obtained before starting the activity (February 2022) were contrasted with a post measure at the end of the intervention (July 2022) to evaluate the impact of the Third Time on the participants' emotional well-being and motivation. Participation was voluntary and anonymous, and participants were informed about the use of the data for solely scientific and research purposes. The study was approved by the Doctoral School, and by the Campus-SIS Unit of the UAB Vice-Rectorate.

Participants

After 5 days after the official announcement of the activity, 80 registration requests were obtained, but according to the resources to implement this pilot study, only 40 participants could be accepted (in order of registration). After sending more detailed information and once confirmation of participation was received, a total of 25 Ph.D. students attended the first session, of which 10 (40%) attended all sessions, 9 (36%) attended only the first 3, and 6 (24%) attended intermittently to the sessions of the Third Half. In this pilot study, none of the participants reported illnesses or significant disorders that affected their health and mobility, so none of the activities had to be adapted. However, it should be noted that the activities were voluntary and there was no obligation to do them for the participants; in any case, alternative activities were contemplated for the participation of Ph.D. students who could not do some of the scheduled activities.

Finally, of the 25 participants, 18 answered all the pre- and post-questionnaires and were included in the analyses. The average age was 31 years (ds = 6.90; minimum = 25, maximum = 53), while 67% were women and 44% were international Ph.D. students.

83% were single, and the remaining 17% were married or in a stable partnership. The representation according to the field of knowledge can be seen in Table 1.

Instruments

A brief survey was designed and administered to investigate the socio-demographic profile of the participants, their levels of emotional well-being and satisfaction with the doctoral training process, their relationship with their supervisor, and their academic motivation toward the completion of their dissertation. This survey was designed in collaboration with several researchers from the Faculty of Psychology who participated voluntarily in its design.The survey was sent to the UAB's doctoral students through an e-mail from the Doctoral School requesting participation, attaching a Googleforms online. Six valid and reliable questionnaires, widely used in research on emotional well-being, were administered:

1. State and Trait Anxiety Inventory (STAI; Riquelme y Casal, 2011): This test measures state (at the moment) and trait (global personality) anxiety levels with a total of 20 items in each scale and format of Likert-type responses. High scores indicate anxiety-related changes in mood, while low scores show emotional stability and the lack of anxiety. In this case, we only administered the state anxiety scale.

2. Brief Scale of Emotional Profiles (Profile of Mood States - POMS; Andrade et al., 2013). This test measures 6 moods based on 30 items: Anger, Fatigue, Vigor, Friendship, Tension, and Depression which must be scored from 0 to 5. They are emotional states, and therefore are variable and reactive to situations and context. Even though they can be indicators of possible psycho-pathologies, they have no clinical value and only show emotional profiles at the time they are measured.

3. Positive and Negative Affect Scale (PANAS; López-Gómez, Hervás & Vázquez, 2015): Includes two subscales of 10 items each that assess the pattern of experiencing positive emotions related to psychological well-being and the experience of negative emotions related to psychological discomfort.

4. Maslach Burnout Inventory Scale (MBI; Maslach & Jackson, 1981): The professional exhaustion syndrome, also called the burnout syndrome, is a suffering that would broadly consist of the presence of a prolonged stress response in the organism in the face of emotional and interpersonal factors that present themselves at work. It

includes chronic fatigue, ineffectiveness and denial of what has happened. It includes 3 subscales measured with 22 items that explore: emotional exhaustion, depersonalization, and personal fulfilment. Some items were adapted to the research work environment.

5. General Anxiety Disorder-2 (GAD2; García-Campayo, et al., 2012): It measures briefly and allows screening to detect the possible presence of symptoms associated with Generalized Anxiety Disorder. The scale consists of 2 items. A Likert-type response scale is used to assess the presence of symptoms in the previous two weeks. The final score is calculated by adding the scores of the 2 items. Th escores can range from 0 to 6, and it can be used to make a preliminary diagnosis: no anxiety disorder (0–2) or possible anxiety disorder (3-6).

6. Patient Health Questionnaire-9 (PHQ9; Kroenke et al., 2001): The PHQ-9 items follow the nine criteria specified in the DSM-IV diagnostic manual for screening for depressive disorder. A Likert-type scale is used to explore whether symptoms have been present in the last two weeks. Depending on frequency ("not at all", "several days", "more than half the days", and "almost every day"), the nine items are scored from 0 to 3 points with a maximum total of 27 points. When the total score is between 10 and 14, 15 to 19, or 20 to 27, it means that the depressive symptoms are moderate, moderately severe, or severe, respectively.

7. Additionally, **5 ad-hoc items** were designed to find out the levels of Ph.D. motivation (including motivation with the thesis, the motivation perceived by the supervisor and by the team), the relationship with the supervisor, and the satisfaction with the doctoral training process, each item with a Likert-type scale with response ranges from 0 to 5 points. Only the motivation items were added to the post measures. The three variables were categorized, indicating scores <3 as unsatisfactory and >2 as satisfactory.

8. Lastly, there were two questions about the doctoral students' health. These questions asked if they had any long-term illnesses, funcional diversity, including mobility problems, in order to consider them and adapt the design of the Third Half activities.

Statistical analysis and quality assessment

Means (and standard deviations) were calculated for each indicator of emotional well-being and the frequencies (percentages) of participants' sociodemographics.

Analyses of variance (ANOVA) were first performed to check if there were baseline differences based on gender, age, family situation, field of knowledge, and type of doctoral program (international/national). They were also contrasted with those of a wider sample of doctoral students who did not participate in the Third Half. Next, the non-parametric Wilcoxon repeated-measure test was used, due to the small sample size, to analyse pre-post changes before and after the activity, and thus explore the impact of the intervention on the different indicators of emotional well-being and motivation of the participants. Additionally, an internal quality assessment was performed, calculating the prevalence of responses to ad-hoc designed questions and measuring the level of satisfaction with the learning process according to the 5 criteria of the activity design: motivation, social connectedness, methods and techniques used, emotional well-being, and research perspective. All analyses were calculated with the statistical program SPSS 20.0.0.

Results

The descriptive statistics of the sample can be seen in Table 1. In the ANOVA, no significant differences were found in the different indicators of well-being according to gender, family situation, field of knowledge, or type of program (international/national).

Table 1. Sociodemographic and scientific profile of the Third Half participants.

	N	%
Gender		
Man	6	33,3
Woman	12	66,7
Non-binary	0	0
Family status		
Single	15	83,3
Married or in a stable relationship	3	17
With children	1	1
Field of knowledge		
Health Sciences	6	33,3
Life sciences	4	22,2
Experimental sciences	2	11,1
Social Sciences	2	11,1
Arts and Humanities	3	16,7
Engineering and Architecture	1	5,6
International		
No	10	55,6
Yes	8	44,4

The profile of the Third Half participants was representative and comparable to the rest of the doctoral students at the UAB, but with slight differences in their initial levels

regarding the relationship with the supervisor (F = 5.07; p = .026), the satisfaction with the learning process (F = 4.07; p =. 045), the perceived motivation from the team (F = 11,55; p =. 001) and the global motivation for completing the doctoral dissertation (F = 5.85; p =. 017), showing lower scores in the Third Half group. Third Half's participants also showed significantly higher scores on POMS' depression scale before starting the activity when compared to the non-participants (F = 4.32; p =. 039) (see Table 2). A prevalence of 50% in generalized anxiety symptoms was observed among the participants before starting the activity, similar and comparable to the 53% of non-participants ($\chi 2$ = 0.90; p = .765). Clinical depression prevalence were also similar and comparable among groups, showing 45% of moderate to severe symptoms in the Third Half participants, and a 40% among non-participants ($\chi 2$ = 5.81; p = .213).

Table 2. Descriptive statistics of motivation and well-being indicators of the Third Half participants compared with a control group of non-participants

	Third Half					
	NO (n = 140)		YES (n = 25)			
	M	*SD*	*M*	*SD*	*F*	*p*
Age	30,94	6,79	33,24	7,82	2,93	,088
Relationship with the supervisor	4,99	1,76	4,24	1,67	5,07	**,026**
Satisfaction with the learning process	2,54	,99	2,15	1,13	4,07	**,045**
Motivation						
Thesis motivation	3,43	1,15	3,15	,86	1,81	,180
Supervisor's motivation	3,32	1,31	3,12	,94	,691	,407
Team motivation	2,99	1,34	2,15	1,07	11,55	**,001**
Total motivation	9,74	3,04	8,41	1,97	5,85	**,017**
STAI_Anxiety (State)	30,19	12,85	34,59	10,03	3,45	,065
POMS						
Anger	25,97	11,84	26,82	10,62	,15	,698
Vigour	8,564	4,61	8,059	4,16	,34	,560
Friendship	14,36	4,00	14,35	4,35	,00	,988
Tension	9,11	5,81	9,41	5,02	,07	,779
Depression	6,31	5,04	8,38	5,80	4,32	**,039**
PANAS						
Positive Affect	29,98	8,20	29,09	7,99	,32	,569
Negative Affect	22,01	8,79	24,47	8,98	2,13	,146
MBI						
Emotional exhaustion	25,97	11,84	26,82	10,62	,14	,702
Depersonalization	8,41	6,28	9,41	6,78	,66	,415
Personal fulfilment	27,42	8,41	25,68	8,19	1,18	,278
GAD2_Anxiety	2,64	2,03	2,44	1,87	,25	,613
% with 2 symptoms	53%		50%			
PHQ_Depression	9,01	6,65	10,00	5,77	,62	,431
% without symptoms	29%		15%			

% slight	31%	30%
% moderate to severe	40%	45%

Notes: STAI- State Trait Anxiety Inventory; POMS- Profile of Mood States; PANAS- Positive and Negative Affect Scale; MBI- Maslach Burnout Inventory; GAD- General Anxiety Disorder; PHQ- Patient Health Questionnaire.

Table 3. Wilcoxon test to contrast measures of motivation and emotional wellbeing before and after the Third Half

Motivation	*M*	*SD*	*Z*	*p*
Thesis			3,24	,001
PRE	3,59	,87		
POST	5,00	1,02		
Supervisor			3,12	,002
PRE	2,94	,72		
POST	3,67	,84		
Research team			2,14	,032
PRE	1,94	1,21		
POST	2,83	1,24		
Global motivation			3,51	,000
PRE	8,00	2,00		
POST	11,33	1,81		
STAI State Anxiety			3,19	,001
PRE	36,22	8,78		
POST	21,22	12,40		
POMS				
Anger PRE	8,61	6,31	2,38	,017
POST	4,94	3,90		
Fatigue PRE	13,28	6,34	2,25	,024
POST	8,44	6,20		
Vigour PRE	7,06	4,19	3,00	,003
POST	12,61	4,11		
Friendship PRE	13,44	3,01	2,39	,017
POST	15,44	2,12		
Tension PRE	10,61	5,68	1,89	,059
POST	6,83	5,00		
Depression PRE	9,22	4,18	3,57	,000
POST	3,50	3,31		
PANAS				
Positive Affect			3,20	,001
PRE	25,78	7,55		
POST	34,72	7,45		
Negative Affect			2,22	,026
PRE	26,61	9,61		
POST	19,33	8,06		
MBI				
Emotional exhaustion			1,61	,107
PRE	30,17	9,69		
POST	23,94	7,74		
Depersonalization			,39	,690
PRE	9,44	6,12		
POST	9,27	5,19		
Personal fulfilment			1,51	,130
PRE	23,71	8,06		
POST	26,94	7,28		
PHQ_Depression			1,58	,114
PRE	9,35	5,53		
POST	6,16	3,85		
GAD2_Anxiety			3,03	,002
PRE	3,11	1,56		
POST	1,50	,92		

Notes: STAI- State Trait Anxiety Inventory; POMS- Profile of Mood States; PANAS- Positive and Negative Affect Scale; MBI- Maslach Burnout Inventory; GAD- General Anxiety Disorder; PHQ- Patient Health Questionnaire.

Table 4. Frequencies and percentages of participants with clinical symptoms of depression and anxiety

Anxiety GAD2	**Pre**		**Post**	
Without symptoms	12	67%	18	100 %
With symptoms	6	33%	0	0%
Depression PHQ9				
Without symptoms	3	17%	6	33%
Slight	6	33%	9	50%
Moderate	6	33%	3	17%
Moderate to severe	1	6%	0,0	0%
Severe	1	6%	0,0	0%

Notes: GAD2- General Anxiety Disorder; PHQ9- Patient Health Questionnaire

Internal quality assessment of the learning process

The descriptive statistics of each item formulated for the evaluation of the internal quality of the learning process can be consulted in Table 4, with 0 being the minimum and 5 the maximum satisfaction rating. The range of values of each item varied between 3.71 and 4.96, thus obtaining a satisfactory assessment in all the quality criteria that were used to design the activity. After categorizing the responses into two levels (satisfied/not satisfied) and grouping the items into five broad scales (emotional well-being, motivation, perspective of the research career, social support, and methods/structure), a 100% of participants were satisfied with the impact on their motivation, a 93% with the impact on their emotional well-being, and a 50% with the impact on their social support.

Table 5. Descriptive statistics of internal quality assessment's items

	Minimum	Maximum	Mean	SD
item1_increasedMOTIVATION	2	5	3,86	1,167
item2_increasedPERSPECTIVE	2	5	3,71	1,139
item3_helpedcopingwithCareer	2	5	3,86	1,167
item4_increasedPositiveEmotions	0	5	3,93	1,439
item5_feltsocialSupport	3	5	4,64	,745
item6_increasedemotionalWellbeing	3	5	4,21	,802
item7_decreasedisolation	1	5	4,36	1,277
item8_enjoyedgamifiedapproach	1	5	4,21	1,311
item9_outdoorapproach	3	5	4,86	,535
item10_enjoyedgroupapproach	3	5	4,64	,633
item11_enjoyedforestbathing	4	5	4,96	1,791
item12_stablishedgoals	2	5	3,93	,997
item13_increasedsocialConnectedness	2	5	4,29	1,069
item14_feltrespectedandValued	3	5	4,64	,745
item15_goodcoachs	3	5	4,64	,633
item16_recommendtheactivity	4	5	4,79	,426

item17_feltmoremotivated	2	5	4,29	1,069
item18_increasedmywellbeingHealth	2	5	4,07	1,072
item19_increasedmyselfKnowledge	2	5	4,36	1,008
item20_feelingpartofReseachcommunity	2	5	4,36	,929

Discussion and conclusions

The Third Half, as a mental-health prevention program carried out at the UAB, is one of the first action plans in the universities of the European Research Area (ERA) led by an institutional initiative following recommendations on mental health policies, executed by local teams of experts in motivation and emotional well-being from the same organization. The design of the intervention as a local-institutional action has facilitated the transfer of knowledge and at the same time applied research within the university itself. It is a long-standing demand by ERA doctoral students (Eurodoc, 2021; Kismihok et al., 2021, 2022) and it should be noted that the results have been satisfactory, not only in terms of the results on the effectiveness of the intervention, but also in terms of the positive experience of coordination between the different local teams involved.

In line with previous studies (Lau & Pretorious, 2019; Levecque et al., 2017; Sorrel et al., 2020; Kismihok et al., 2022), the data shows that the ECRs at UAB are satisfied and motivated with their work, but between 41% and 47% have symptoms of depression and anxiety, respectively. The results observed during the COVID-19 pandemic in the general university population have also been replicated, since the incidence of depression and anxiety was between 45% and 54% (Sanz, 2022). However, while it is true that these indicators are alarming, the relevance of this study relies on the positive results of Third Half intervention, since a significant improvement has been observed in Ph.D.s' wellbeing and motivation participating in the activity. On the one hand, significant increases were observed after the intervention in all motivation indicators (including Ph.D.s' perceived motivation of the supervisors and research teams), vigour, friendship and positive affect, while significant reductions were obtained in anxiety, anger, fatigue, and depression, as well as in negative affect and symptoms of generalized anxiety disorder. Even though statistical significance was not reached yet, it's important to point out the observed decreases in depressive symptoms, burnout, and the number of people at risk of having severe depression.

These numbers show that this kind of cost-benefit intervention should be used and studied more in Catalan universities, and they should be taken into account to keep

researchers from getting mentally or emotionally hurt on the job. The results motivate us to continue working together to overcome the so-called "Ph.D. crisis" and promote healthier research careers, as well as to develop specific actions that promote the mental health, not only of doctoral students, but of the entire research and academic community of the ERA after the Covid-19 pandemic (Evans et al., 2018; Guthrie et al., 2017; Lau & Pretorius, 2019; Levecque et al., 2017; Woolston, 2017).

In this way, initiatives like the Third Half, designed following quality criteria and by experts in mental health - could be a cost-effective solution from universities to offer institutional support for the academic performance and integral development of younger researchers (Kismihok et al., 2022; Lau & Pretorius, 2019; Skopek et al., 2022; van Rooij et al., 2021). Initiatives like this could not only reduce the incidence of mental health problems among ECRs, but also increase academic motivation, and therefore, reduce the prevalence of drop-outs or doctoral students who abandon the doctoral career, which is estimated to be between 50% and 70% in the ERA, with some studies indicating that only 10% complete doctoral training, showing the hard path to complete the doctoral process (Castelló et al., 2017; van Rooij et al., 2021). It should be noted that the intervention axes of the Third Half have been designed with the fundamental objective of reducing social isolation and demotivation, which are the main risks for depression and anxiety, by offering free and expert psychological support, hidden in funny gamified outdoor activities. It has been an intervention well valued by the doctoral students, as indicated by the data on the internal quality of the process, with satisfaction indicators that validate the results obtained on its efficacy. There was almost a 100% of satisfaction in the assessment of the internal quality regarding the different psychosocial objectives set out in the Third Half: to increase participants' emotional well-being, to increase motivation, and decrease social isolation through the use of evidence-based methods for the collective management of researchers' well-being. It should be remembered that social isolation and demotivation, but also the lack of institutional support, are the key-factors that the Third Half aimed to address, since they have been worsened during the Covid-19 pandemic, especially among international ECRs, and since these factors explain a 40% of dropouts from doctoral studies (Castelló et al., 2017; Skopek et al., 2022).

For these reasons, it is concluded that the creation and pilot implementation of the Third Half has been satisfactory and has been effective in responding to the strategic

challenges of the ERA and to the demands of the European Ph.D. students (EURODOC, 2021; Kismihók et al. 2022; Metcalfe et al., 2022; O'Neill & Schroijen, 2018; Remo, 2021). This intervention has demonstrated its effectiveness in improving the psychosocial support, motivation and wellbeing of ECRs. Although it still presents sample limitations and thus, limitations regarding the generalizability of the results, the results encourage further research to analyse this psychoeducational intervention since it might be a good cost-effective strategy to reduce the risks of the research career associated with mental health, motivation, and emotional wellbeing. This type of actions could facilitate upskilling in stress and burnout regulation, communication and social skills, teamwork, and ultimately, in the creation of a healthier organizational culture and working climate where young researchers develop (Castelló et al., 2017; Metcalfe et al., 2022; OMS, 2020; Sorrel et al., 2020). The results encourage the implementation of the Third Half in the following academic year to reach a wider range of ECRs and to offer it as an optional certified activity in the UAB doctoral programmes. Its implementation will also offer alternatives to enhance the methodological design and overcome the present limitations, that point to the need of a) including a control group to compare the pre-post design, b) widening the sample and number of participants of different fields and characteristics, c) including randomisation techniques or d) adapting the Third Half to other cultural backgrounds to contrast and generalise its results with different trainers and mentors.

The voluntary efforts of the several university teams have indeed facilitated this intervention; however, additional institutional efforts and investments in structuring and standardizing actions are required to facilitate permanent and sustainable psychoeducational services that promote the optimal development of researchers in the workplace over time. These training services are not yet widespread in the ERA, in part because their implementation depends primarily on researchers' personal motivations, grants and projects and not on the effective implementation of mental health promotion policies at a local level (Kismihok et al., 2022; Metcalfe et al., 2022; ReMO, 2022). Besides, despite the fact that some pioneering universities such as the UAB are responding to European policies at a local level, efforts must continue to be made to guarantee the implementation of the European Charter and the Code of Conduct for Researchers (European Commission, 2021). More generalized structural actions are still needed, prioritizing the implementation of psychosocial support services within doctoral

programs, lead by administrative staffs and with its corresponding local investments to face the economic costs and the human resources needed to implement them. The goal is collective and systemically affects all the ERA community, thus it is important to continue working together to build healthier research and learning environments for the well-being and optimal development of the research community at a local level after the Covid-19 pandemic (ReMO, 2021). Therefore, it could be possible to continue progressing toward the promotion of well-being and prevention in mental health in Higher Education, as a priority of the sustainable development goals, set at a global-international level by the European Commission, the United Nations, and the World Health Organization (UN, 2022; WHO, 2022).

References

Andrade, E., Arce, C., De Francisco, C., Torrado, J., & Garrido, J. (2013). Versión breve en español del cuestionario POMS para deportistas adultos y población general. *Revista de psicología del deporte*, *22*(1), 95-102.

Castelló, M., Pardo, M., Sala-Bubaré, A., & Suñé-Soler, N. (2017). Why do students consider dropping out of doctoral degrees? Institutional and personal factors. *Higher Education*, *74*(6), 1053-1068. https://doi.org/10.1007/s10734-016-0106-9

Cladellas-Pros, R., Castelló-Tarrida, A., & Parrado-Romero, E. (2018). Satisfacción, salud y estrés laboral del profesorado universitario según su situación contractual. *Revista de Salud Pública*, *20*, 53-59. https://doi.org/10.15446/rsap.V20n1.53569

European Comission (2005). The European Charter for Researchers. https://euraxess.ec.europa.eu/jobs/charter

European Council of Doctoral Candidates and Junior Researchers. (2021 December 15). Mental Health Working Group. http://www.eurodoc.net/mental-health-wg

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature biotechnology*, *36*(3), 282-284. https://doi.org/10.1038/nbt.4089

Finn, K. E., Yan, Z., & McInnis, K. J. (2018). Promoting physical activity and science learning in an outdoor education program. *Journal of Physical Education, Recreation & Dance*, *89*(1), 35-39. https://doi.org/10.1080/07303084.2017.1390506

García-Campayo, J., Zamorano, E., Ruiz, M. A., Pérez-Páramo, M., López-Gómez, V., & Rejas, J. (2012). The assessment of generalized anxiety disorder: psychometric validation of the Spanish version of the self-administered GAD-2 scale in daily medical practice. *Health and Quality of Life Outcomes*, *10*(1), 1-10. https://doi.org/10.1186/1477-7525-10-114

Gilbertson, K., Ewert, A., Siklander, P., & Bates, T. (2022). *Outdoor education: Methods and strategies*. Human Kinetics.

Grant, A. M. (2008). Past, present and future: The evolution of professional coaching and coaching psychology. In S. Palmer & A. Whybrow (Eds.), *Handbook of coaching psychology: A guide for practitioners* (pp. 23–39). Routledge/Taylor & Francis Group.

Grant, A. M. (2022). Is it time to REGROW the GROW model? Issues related to teaching coaching session structures. Coaching Practiced, 29-40. https://doi.org/10.1002/9781119835714.ch3

Green, L. S., & Norrish, J. M. (2013). Enhancing well-being in adolescents: Positive psychology and coaching psychology interventions in schools. In *Research, applications, and interventions for children and adolescents* (pp. 211-222). Springer, Dordrecht.

Guthrie, S., Lichten, C. A., Van Belle, J., Ball, S., Knack, A., & Hofman, J. (2018). Understanding mental health in the research environment: A rapid evidence assessment. *Rand health quarterly*, *7*(3). https://www.rand.org/pubs/research_reports/RR2022.html

Horta, H., Cattaneo, M. & Meoli M. (2018) Ph.D. funding as a determinant of Ph.D. and career research performance. *Studies in Higher Education, 43(*3), 542-570. https://doi.org/10.1080/03075079.2016.1185406

Huang, W. H. Y., & Soman, D. (2013). Gamification of education. *Report Series: Behavioural Economics in Action*, *29*, 11-12.

Johnson, R. L., Coleman, R. A., Batten, N. H., Hallsworth, D., & Spencer, E. E. (2020). The Quiet Crisis of Ph.D.s and COVID-19: Reaching the financial tipping point. *Researchsquare preprints*. https://doi.org/10.21203/rs.3.rs-36330/v2

Khatib, M., Sarem, S. N., & Hamidi, H. (2013). Humanistic Education: Concerns, Implications and Applications. *Journal of language teaching & research*, *4*(1).

Kiryakova, G., Angelova, N., & Yordanova, L. (2014). Gamification in education. Proceedings of 9th International Balkan Education and Science Conference. http://www.sun.ac.za/english/learning-teaching/ctl/Documents/Gamification%20in%20education.pdf

Kismihók, G., McCashin, D., Mol, S. T., & Cahill, B. (2022). The well‐being and mental health of doctoral candidates. *European Journal of Education*. https://doi.org/10.1111/ejed.12519

Kismihók, G., Cahill, B., Gauttier, S., Metcalfe, J., Mol, S. T., McCashin, D., ... & Kling, C. (2021). Researcher Mental Health and Well-being Manifesto. https://doi.org/10.5281/zenodo.5788557

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ‐9: validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*(9), 606-613.

Lau, R. W. K., & Pretorius, L. (2019). *Intrapersonal wellbeing and the academic mental health crisis*. In: Pretorius, L., Macaulay, L., Cahusac de Caux, B. (eds) Wellbeing in Doctoral Education. Springer, Singapore. https://doi.org/10.1007/978-981-13-9302-0_5

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in Ph.D. students. *Research policy*, *46*(4), 868-879. https://doi.org/10.1016/j.respol.2017.02.008

López-Gómez, I., Hervás, G., & Vázquez, C. (2015). Adaptación de las" Escalas de afecto positivo y negativo"(PANAS) en una muestra general española. *Psicología Conductual*, *23*(3), 529.

Lorenzetti, D. L., Shipton, L., Nowell, L., Jacobsen, M., Lorenzetti, L., Clancy, T., & Paolucci, E. O. (2019). A systematic review of graduate student peer mentorship in

academia. *Mentoring & Tutoring: Partnership in Learning*, *27*(5), 549-576. https://doi.org/10.1080/13611267.2019.1686694

Maslach, C., & Jackson, S. E. (1981). MBI: Maslach burnout inventory. *Palo Alto, CA*, *1*(2), 49-78.

Metcalfe, J., Bebiroglu, N., Kismihók, G., Camilleri, J., & Cahill, B. (2022 July 13-16). *Creating Research Environments that foster Mental Health and Wellbeing* [Conference Presentation]. EuroScience Open Forum (ESOF), Leiden, Netherlands. https://zenodo.org/badge/DOI/10.5281/zenodo.6359935.svg

Muro, A. & Bonilla, I. (2022). UCAA_docs: The Third Half exercises, techniques and description of the sessions. Unit of Coaching and Academic Support, Service of Psychology. Bellaterra: Autonomous University of Barcelona.

Muro, A., Bonilla, I., Gunes, M., Feliu, A., Torregrossa, M., Sanz, A., Déus, J. & Cladellas, R. (2022). UCAA_docs: Mental Health indicators of the UAB doctoral students. Internal Report, Autonomous University of Barcelona. Internal Report, Autonomous University of Barcelona.

Muro, A., Feliu-Soler, A., Canals, J., Parrado, E., & Sanz, A. (2022). Psychological benefits of Forest Bathing during the COVID-19 pandemic: a pilot study in a Mediterranean forest close to urban areas. *Journal of Forest Research*, *27*(1), 71-75. https://doi.org/10.1080/13416979.2021.1996516

Muro, A., Soler, J., Cebolla, A., & Cladellas, R. (2018). A positive psychological intervention for failing students: Does it improve academic achievement and motivation? A pilot study. *Learning and Motivation*, *63*, 126-132. https://doi.org/10.1016/j.lmot.2018.04.002

Nah, F.FH., Zeng, Q., Telaprolu, V.R., Ayyappa, A.P., Eschenbrenner, B. (2014). Gamification of Education: A Review of Literature. In: Nah, F.FH. (eds) HCI in Business. HCIB 2014. Lecture Notes in Computer Science, vol 8527. Springer, Cham. https://doi.org/10.1007/978-3-319-07293-7_39

Naumann, S., Matyjek, M., Bögl, K., & Dziobek, I. (2022). Update on the Mental Health Crisis in Academia: Effects of the COVID-19 Pandemic on Early Career Researchers' Mental Health and Satisfaction with Ph.D. training. https://10.31234/osf.io/nv4ut

Norton, A., Cherastidtham, I., & Mackey, W. (2018). *Mapping Australian higher education 2018* (No. Grattan Institute Report No. 2018-11). Grattan Institute. https://apo.org.au/node/192826

OECD (2019). *Education at a Glance 2019: OECD Indicators.* https://www.oecd.org/education/education-at-a-glance/

O'Neill, G., & Schroijen, M. (2018). Early-career researchers and mental health. *Impact*, *2018*(10), 4-5. https://qbionano.files.wordpress.com/2018/05/impact-vol2018-page91_eurodoc.pdf

Pallarés, S., Miró, S., Pérez-Rivases, A., Torregrosa, M., Ramis, Y., Cruz, J., & Viladrich, C. (2020). Motivaciones hacia la actividad física de adolescentes, adultos mayores y exdeportistas de élite: Un análisis cualitativo. *Pensamiento psicológico, 18*(2), 3-14. https://doi.org/10.11144/javerianacali.ppsi18-2.mafa

Palmer, S., & Whybrow, A. (Eds.). (2018). *Handbook of coaching psychology: A guide for practitioners*. Routledge.

Pyhältö, K., Tikkanen, L., & Anttila, H. (2022). The influence of the COVID-19 pandemic on Ph.D. candidates' study progress and study wellbeing. *Higher Education Research & Development*, 1-14. https://doi.org/10.1080/07294360.2022.2063816

Reseacher Mental Health Observatory. (2021, January 10). *ReMO COST Action CA19117: Researcher Mental Health*. https://projects.tib.eu/remo/

Reseacher Mental Health Observatory. (2022, June 29). *ReMO Ambassador Programme.* https://projects.tib.eu/remo/

Riquelme, A. G., & Casal, G. B. (2011). Actualización psicométrica y funcionamiento diferencial de los ítems en el State Trait Anxiety Inventory (STAI). *Psicothema*, *23*(3), 510-515.

Rogers, C. R. (1985). Toward a more human science of the person. *Journal of Humanistic Psychology*, *25*(4), 7-24.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Sharp, A. (2012). Humanistic approaches to learning. In *Encyclopedia of the sciences of learning* (pp. 1469-1471). Springer US.

Sanz, T. (2022, May 13-14). Impact of COVID on the Mental Health of the Population. PSYCOVID project. [Conference Presentation]. 40 Jornades Sanitàries del Vallès, Acadèmia de Ciències Mèdiques de Catalunya i Balears. Sabadell, Barcelona. https://www.researchgate.net/publication/360619477_Impact_of_COVID_on_the_Mental_Health_of_the_Population

Skopek, J., Triventi, M., & Blossfeld, H. P. (2022). How do institutional factors shape Ph.D. completion rates? An analysis of long-term changes in a European doctoral program. *Studies in Higher Education*, *47*(2), 318-337. https://doi.org/10.1080/03075079.2020.1744125

Sorrel, M. A., Martínez-Huertas, J. Á., & Arconada, M. (2020). It must have been burnout: Prevalence and related factors among Spanish Ph.D. students. *The Spanish Journal of Psychology*, *23*. https://doi.org/10.1017/SJP.2020.31

Stober, D. R. (2006). Coaching from the humanistic perspective. In D. R. Stober & A. M. Grant (Eds.), *Evidence based coaching handbook* (pp. 17-51). Hoboken, NJ: John Wiley & Sons, Inc.

Treve, M. (2021). Study of humanistic education: Concerns, implications, and applications. *Turkish Journal of Computer and Mathematics Education, 12*(11), 6303-6310. Retrieved from http://proxy.grenoble-em.com/login?url=https://www.proquest.com/scholarly-journals/study-humanistic-education-concerns-implications/docview/2639734934/se-2

Tyson, P., Wilson, K., Crone, D., Brailsford, R., & Laws, K. (2010). Physical activity and mental health in a student population. *Journal of mental health*, *19*(6), 492-499. https://doi.org/10.3109/09638230902968308

United Nations. (2022). Sustainable Development Goals. https://www.un.org/sustainabledevelopment/es/

Universitat Autònoma de Barcelona. (2022a). Campus Saludable i Sostenible. https://www.uab.cat/web/conoce-la-uab/itinerarios/campus-sis-1345668502857.html

Universitat Autònoma de Barcelona. (2022b). La Xarxa CORE en Salut Mental. https://www.uab.cat/web/investigar/cores-uab/core-en-salut-mental/la-xarxa-core-en-salut-mental-1345696629751.html

Universitat Autònoma de Barcelona. (2022c). Unit of Coaching and Academic Support. https://sct.uab.cat/spl/node/219

Universitat Autònoma de Barcelona. (2022d). The Third Half. Research staffs meeting and support groups. https://www.uab.cat/web/newsroom/news-detail/the-third-half-research-staff-meeting-and-support-groups-1345830290613.html?detid=1345853475329

Whitmore, J., Kauffman, C.; Susan, D. (2013). GROW grows up: from winning the game to pursuing transpersonal goals. In David, Susan A.; Clutterbuck, David; Megginson, David (eds.). *Beyond goals: effective strategies for coaching and mentoring*. Farnham, Surrey: Gower Publishing Limited. pp. 245–260. https://doi.org/10.4324/9781315569208

Woolston, C. (2019). Ph.D.s: the tortuous truth. *Nature*, *575*(7782), 403-407. https://media.nature.com/original/magazine-assets/d41586-019-03459-7/d41586-019-03459-7.pdf

World Health Organisation. (2022). Mental Health. https://www.who.int/health-topics/mental-health#tab=tab_2