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Christensen, M., Fladmark, S.F., Zuberbuhler, J.P. et al. (2 more authors) (2024) The ARK programme – a participatory organizational health intervention and development of meaning at work and work to home conflict over time for academics in Norway. In: Edwards, M., Martin, A., Ashkanasy, N. and Cox, L.E., (eds.) Research Handbook of Academic Mental Health. Edward Elgar Publishing , pp. 490-507. ISBN 9781803925073

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This is a draft chapter. The final version is available in Research Handbook of Academic Mental Health edited by Marissa S. Edwards, Angela J. Martin, Neal M. Ashkanasy, Lauren E. Cox published in 2024, Edward Elgar Publishing Ltd

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**The ARK programme – A Participatory Organizational Health Intervention and  
Development of Meaning at Work and Work to Home Conflict over Time for Academics  
in Norway**

Marit Christensen<sup>1</sup>, Silje Fossum Fladmark<sup>1</sup>, Josefina Peláez Zuberbuhler<sup>1</sup>, Siw Tone

Innstrand<sup>1</sup>, Karina Nielsen<sup>1,2</sup>

Department of Psychology, Norwegian University of Science and Technology, Norway<sup>1</sup>

Institute of Work Psychology, University of Sheffield, UK<sup>2</sup>

E-mail: [marit.christensen@ntnu.no](mailto:marit.christensen@ntnu.no)

**Publisher:** Edward Elgar Publishing

**Title of book:** Handbook of Academic Mental Health

**Editors:** Marissa Edwards, Angela Martin, Neal Ashkanasy

**Abstract**

The chapter aims to present results from a Norwegian university that over a decade has been using the ARK- programme, which is a holistic intervention programme for mental health and wellbeing. We first present the theoretical background and the content and process of the ARK intervention programme with a special focus on the importance of a positive development of work to home balance and meaning at work in order to organise for good mental health and well-being in academia. As the institutions' intellectual capital and primary assets are the competence and commitment of the academic employees, it is of great importance to work to improve and maintain the experience of meaning and develop sustainable organisations for both tenure and precarious employees in the future. There is also a need for investigating the work

to home conflict in the academic context because of increased teaching loads and high requirements for publishing research, at the same time as employees are experiencing difficulties managing all the demands within the official working hours blurring the boundaries between work and home life. Growth analyses were conducted to explore the trajectories of change in *Meaning at Work* and *Work to Home Conflict* for tenured and precarious employees over the last decade. The results show a reduction over time in work family conflict and an increase in the experience of meaning at work for both tenured and precarious employees in an organisation using the ARK-programme. Experiences from working with the ARK-programme shows that it is important to facilitate for participation of multiple stakeholders within the organisation and target actions across multiple levels of the organisation to ensure a fit between the needs for improvement and the interventions. To ensure a sustainable development and organisational learning over time the programme is built on the five-phase model of an implementation process which is offering the opportunity for organisational learning by attaining new knowledge on what works (or not), for whom under which circumstances.

## **Introduction**

The universities have been growing enormously the last decades, and we are now experiencing new challenges to create universities that attract diverse students, attract funding, deal with budgetary constraints, preserve and improve technological infrastructures, and respond to various demands imposed by the community (Fredman & Doughney, 2012; Kenny, 2017). Academics have a high prevalence of common mental disorders with 32-42 percent occurrence, compared to around 19 percent in the general population (Levecque, 2017). Increased levels of sickness absenteeism and turnover due to a decrease in poor mental health and well-being among employees will have economic implications for universities through lowered levels of quality of production of research and teaching (Kismihók et al., 2022). The

amount of precarious work and deteriorating working conditions in academia can be shown in the development in many countries around the world. Starting with the US where 3 percent of academic employees were off the tenure track in 1969, compared to 2014 where the number had reached 70 percent (AAUP, 2018). A similar development is also shown in Europe. According to the European Commission, in Germany, Estonia, Austria, Finland and Serbia there are no more than 30 percent of academic staff with tenure (Eurydice, 2017). In order for the academic institutions to be sustainable and secure attractive workplaces and recruitment to the sector emphasis should be put on the challenges concerning all groups within the academic context, both tenure and precarious employees in order to create a good working environment. As the institutions' intellectual capital and primary assets are the competence and commitment of the academic employees, it is of great importance to work to improve mental health and well-being and develop sustainable organisations for both tenure and precarious employees in the future (Gappa & Austin, 2010). In this chapter we follow the development of both tenure and precarious employees across a decade after conducting a holistic intervention programme for mental health and wellbeing, labelled ARK.

Employees in the academic sector have traditionally had access to resourceful working conditions like autonomy, self-actualisation, variety, meaning, and social prestige which in turn should be leading to positive health outcomes (Houston et al., 2006). However, over the last few decades, academics have experienced increased pressure and demands, and lower levels of reported mental health and well-being (Gappa et al., 2007). We are especially noticing the need for studying work to home conflict in the academic context because of increased teaching loads and high requirements for publishing research, at the same time as employees have difficulties managing all the work within the official working hours blurring the boundaries between work and home life (Currie & Eveline, 2011; Fredman & Doughney, 2012; Gappa et al., 2007;

Kenny, 2017; Kinman, 2001; Kyvik, 2013; Leung et al., 2000). At the same time universities are faced with accommodating the new realities encountered by the academic staff, who are simultaneously managing their academic careers and their domestic responsibilities as dual-career couples or single-parent families, boosting the need for flexibility in their careers (Gappa & Austin, 2010). Young researchers in the category of precarious workers are often in the phase of planning or starting a family life and are more prone to challenging regarding the work-family balance. Attracting the best young researchers is dependent of a work environment emphasising a work-home balance. In context of these changes, Gappa and Austin (2010) argue that core values labelled “essential elements” in the twenty-first-century faculty (i.e., respect, equity, academic freedom and autonomy, flexibility, collegiality, and professional growth) must be protected and nurtured to attract and retain excellent academic employees in the future. Based on the previous literature, we want to focus especially on the experience of meaning at work which historically has been one of the reasons why people are drawn to academia.

The institutional context, organizational structure, researcher career development support, and academic culture, as well as managerial practices significantly impact on wellbeing and mental health of academics (Kismihók et al., 2022). Even though organisations and different stakeholders are aware of the increasing challenges regarding mental health issues at work, less than 30 percent of workplaces in Europe have programmes, procedures, and practices in place to deal with them systematically (EU-OSHA, 2019). Tailored and efficient prevention and action programs within academia can address workplace wellbeing and mental health within an academic context by promoting resources in the psychosocial work environment to moderate the negative effect of the increased demands and stimulate the experience of meaning at work (Innstrand & Christensen, 2018). Considering these developments, we need to know more about

how the higher education sector can work systematically with organizational interventions for improving the essential factors like work to home conflict and meaning of work.

In Norway, over 20 universities and university colleges have been applying a participatory health promoting intervention programme called ARK (Arbeidsmiljø- og Klimaundersøkelser, Norwegian abbreviation for Work Environment and Climate Surveys) (Innstrand et al., 2015) since 2012 with positive results. The aim of this chapter is to present the content and process of the ARK intervention programme, lessons learned, and to show the prolonged development of two outcomes of the essential elements identified by Gappa and Austin (2010) – *work to home conflict* and *meaning at work*.

### **Theoretical background**

According to Kinman (2001), academics' job demands have increased extensively. However, there has been no matching increase in their job resources. Drawing on the Job Demands-Resources model (JD-R; Bakker & Demerouti, 2007), this imbalance can have negative effects on academics' mental health, well-being, and productivity (Nicholls et al., 2022). According to the JD-R model, it is important to identify the job resources, which will not just serve as a buffer for the negative impact on well-being and mental health but is also functional in achieving work goals and stimulate personal growth, learning, and development (Bakker & Demerouti, 2007). This can in turn provide insights into how academic institutions can promote work engagement (Helland et al., 2020), which in turn has been linked to academic productivity (Christensen et al., 2018). In this chapter, we study the development of meaning at work and work to home conflict over time in units using the ARK-programme. Meaning at work has been shown to be high in the academic context as the work is often referred to as a calling and devoted to constant learning and contribution to development in research and teaching (Vostal, 2014; Bellamy et.

al., 2003). According to the JD-R model, job resources such as meaning serve, not only, as a buffer for the negative impact on well-being and mental health but are also functional in achieving work goals and stimulate personal growth, learning, and development. Identifying the “Essential Elements” of the twenty-first-century faculty work, Gappa and Austin (2010) argue that personal growth is highly significant for faculty satisfaction and for attracting and retaining excellent academic employees in times of change. Indeed, meaning, identified as one of seven needs of importance for health and wellbeing (Maslach & Banks, 2017), have been associated with improved positive work-related health among male and female academics in Norway (Anthun & Innstrand, 2015). Another topic that has been highlighted as a challenge in academia is the work-home balance.

Although work to home conflict is highly prevalent across different occupational groups (Innstrand et al., 2010), work to home conflict is found to be particularly high among academics (Pejtersen et al., 2010) and the most frequent reason for women to consider leaving academia (Foster et al., 2000). Requirements related to new public management, extended teaching periods and the introduction of digital tools for communication and technology-based teaching have contributed to intensifying the academic work and has also contributed to efface the boundaries between work and home (Currie & Eveline, 2011). The academic context is also particularly sensitive to work-home issues, Eby et al. (2005) found that work to home conflict is higher among those who have high work demands, report higher job involvement and more autonomy. As balancing work and home life have been ranked as the greatest challenge among female academics (McGuire et al., 2004) and are strongly related to the health and wellbeing of academic personnel (Innstrand et al., 2022), strategies to ensure a good interaction between these two domains are critical.

Establishing that there are new challenges and demands for future academic work it is important to implement strategies and programmes for improving the academic working life to promote the experience of meaning at work and reduce work to home conflict. Organizational interventions are often recommended and used to improve the psychosocial work environment in organizations and, thereby, employee wellbeing and mental health (Nielsen et al., 2010). These organizational interventions are often defined as planned, behavioural, theory-based measures that aim to change how work is organized, designed, and managed with the goal of improving the mental health and wellbeing of participants (Nielsen, 2013; Richardson & Rothstein, 2008). Three key principles form the foundation for the ARK-programme; The Nordic participatory bottom-up perspective, the multi-stakeholder - multi level approach, and the five-phase model for developing, implementing, and evaluating organisational interventions (Nielsen et al., 2010).

### ***Nordic perspective – participation***

Scandinavia has a long tradition of employee participation which is a core aspect of many work environment initiatives originated within the Nordic model of work organization (Gustavsen, 2011). A key aspect of Nordic model is the tripartite cooperation between local and national authorities, employer organisations, and trade unions where the aim is to make sure the voices from different interests are heard (Gustavsen, 2011). 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. Several studies have shed light on the importance of participation as an important process factor in explaining intervention success (Christensen et al., 2019; Nielsen & Christensen, 2021; Nielsen & Randall, 2012). According to Nielsen and Christensen (2021) there are many advantages with a participatory approach in organisational interventions; it ensures employees' buy-in and ownership; it focuses on the fact



that the owner knows where the shoe pinches and thereby which demands and resources that needs to change within the work environment to impact their mental health and well-being; it optimizes the fit with the organizational context, and it facilitates the five phases of the process. Another benefit is also that it helps create time and place for dialogue between the stakeholders about the changes that needs to be made. With a participatory approach both the tenure and precarious workers can be engaged and heard by giving their feedback on which changes are needed for improving their working environment regarding experience of meaning and work to home conflict, and thereby tailor the interventions to the needs of the specific groups.

### ***Multi stakeholder – multi level perspective***

Another important factor deriving from the Nordic model is the inclusion of stakeholders from all levels of the organisation and multi-level interventions. The collaborative perspective which is emphasized in the Nordic model underlines the need for including stakeholders from all levels of the organization to be involved (e.g., senior manager, line manager, HR, safety representatives, union representatives, employees, etc.). This approach can promote a culture of shared responsibility for the psychosocial work environment, well-being, and mental health within the organization (Jenny et al., 2014), and thereby collaboration on future task and systematic work on the work environment. The interventions should also be developed targeting all levels in the workplace to find where the needs for improvement and preservation are. Job demands and job resources can be found at different levels of the organisation; such as the individual level (I), the working group (G), the leader (L), and the organization (O). These levels are framed as the IGLO model (Nielsen & Christensen, 2021). Strategies and programmes for improving mental health in academia should strive to include multiple stakeholders and to fit the intervention to the right context level. The multi-stakeholder perspective can increase more awareness, involvement, enhance a common understanding of

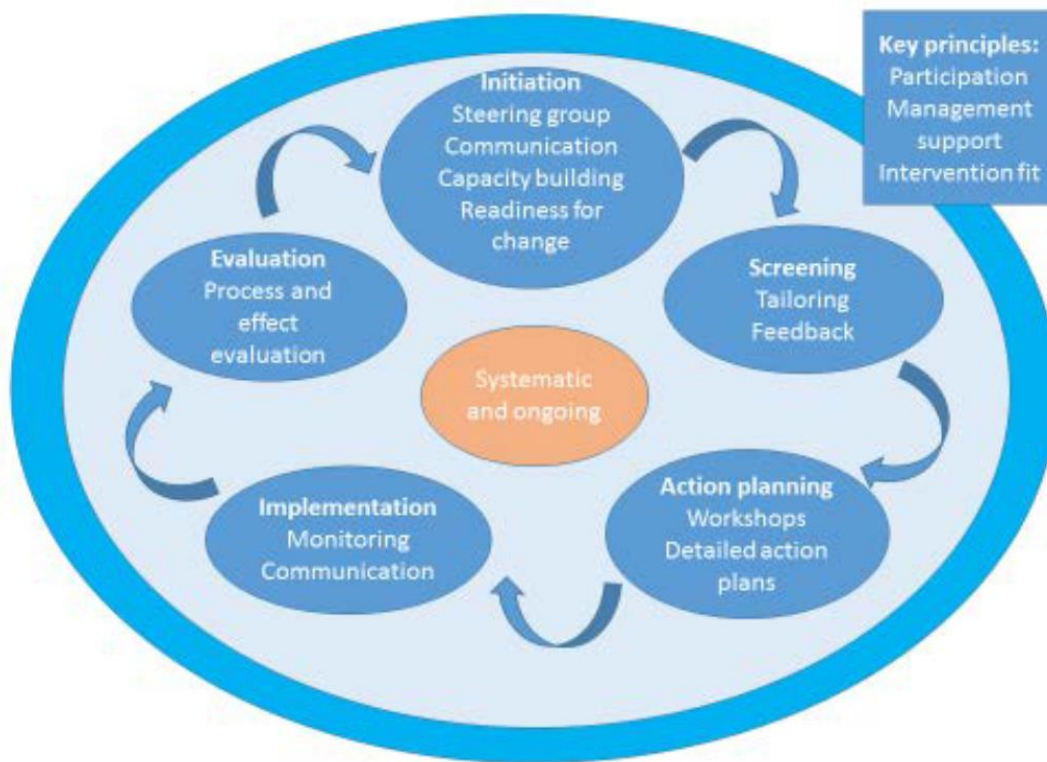
the situation for the different groups within academia, and clarify for all why it is important to increase the experience of meaning at work and decrease the work to home conflict in an academic context. Furthermore, the multilevel perspective can enhance the possibility of avoiding the risk of “blaming the victim” approach by targeting the appropriate levels with the intervention to improve the situation. To deal with the systemic issues regarding the working conditions of precarious workers the organizational level should be an important target for potential changes to be made in programmes, policies, and practices, in addition to cultural change.

### ***Five phase model***

It is not only the content of an organisational intervention that will define success, but the implementation process is also identified as just as important (Nielsen & Randall, 2013). Nielsen et al. (2010) proposed a framework for developing the processual work of an organizational intervention, including (1) initiation phase, (2) screening phase, (3) action planning phase, (4) implementation phase and (5) evaluation phase. Within the different phases, specific topics found to be especially important are highlighted based on the revised model from Nielsen and Noblet (2018) (See

Figure 1).

**Figure 1:** *Revised model of organisational interventions (Nielsen & Noblet, 2018)*



However, knowledge about what works for whom under which circumstances and why regarding interventions for improving the psychosocial working environment in the academic context are scarce. To understand what worked, for whom (e.g., tenure or precarious workers) in which circumstances to increase meaning at work and decrease work to home conflict, the implementation process must be evaluated. We must understand for example how well the vision of the programme was communicated, if the participants were ready to change, if the screening were done targeting the needs of the interventions, and if the interventions were implemented according to the action plan in order to understand why or how? the interventions

did or did not lead to the expected outcomes. Many countries have their own legislation and guidelines on how to create healthy workplaces, therefore it is of uttermost importance to introduce experiences with processes shown to successfully implement interventions for a better work environment. We need more knowledge on how to develop, implement and evaluate interventions for the academic context. The current chapter provides an example on how to implement participatory health promoting interventions within academic institutions and shows the development of work to home conflict and meaning at work along the implementation of this programme.

### ***Research questions***

We want to explore the development at four-time waves in the experience of Meaning at Work and Work to Home Conflict in the academic sector using the ARK-programme over the last decade, amongst both precarious and tenured scientific employees to explore potential difference in the course of development.

Hypothesis 1: The ARK-programme leads to an increased experience of meaning at work during 2014, 2017, 2019 and 2021 for both tenured and precarious employees.

Hypothesis 2: The ARK-programme leads to a reduction in work to home conflict during 2014, 2017, 2019 and 2021 for both tenured and precarious employees.

## **Methods**

### ***The ARK intervention programme***

The ARK intervention programme 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, mental health, and performance in higher education in Norway (Innstrand et al., 2015). The initiative for the development of the ARK-programme came from the four largest universities in Norway in 2009. The common initiative underlined the importance of building a programme based on a strong theoretical basis including both a prevention of harm and promotion of good mental health and well-being in academia. Another important goal was to gather data as a contribution to research for a better understanding of the work situation in the higher education sector in Norway. The development was grounded in a cooperation between researchers within occupational health psychology and practitioners from HR and HSE within the academic sector. The Norwegian Association of Higher Education Institutions (UHR) contributed also to the project being realised by allocating funds used to finance the scientific developmental work of the ARK-programme.

The developmental process of the programme started with literature reviews, qualitative pilot interviews, and pilot testing of the questionnaires. The KIWEST (Knowledge Intensive Work Environment Survey Target) is a quantitative scale-based questionnaire built on the Job-Demands-Resources model (JD-R; Bakker & Demerouti, 2007). In 2012, a full pilot was conducted including both the questionnaire survey and survey feedback process (5600 employees). The feedback from these pilot tests were used to adjust the questionnaire. Since the first pilot, over 20 universities and university colleges in Norway, in addition to two university colleges in Sweden, have used the ARK-programme within their institutions. Most of the institutions run the programme every second year and all the data are gathered in a shared database. The data are used for aggregating feedback reports for the users including data from a national baseline for comparisons. The users are also able to monitor their own development regarding the psychosocial work environment, well-being, and mental health over time. The database consists in 2023 of over 60.000 responses. The questionnaire is translated into English,

Dutch and Swedish. ARK has a steering group with representatives from the largest universities in Norway. The steering group is tasked with ensuring that ARK is managed and operated as intended, and to discuss fundamental issues related to further development of the ARK-programme.

The ARK-programme is built on the five-phase model of Nielsen et al. (2010) and consists of the following elements to be used throughout the phases: First, the KIWEST-questionnaire including standardised and validated questions on job demands, resources, climate, meaning at work, work to home conflict, motivation, well-being, and mental health. Second, the FactSheet I which is a questionnaire about structures within the organisation that may influence the work environment. This questionnaire is intended to be filled in as a collaboration between the line managers and the safety representative together to initiate a discussion and to ensure a shared understanding of the situation. FactSheet1 was taken out of the programme in 2017 and has been replaced by a dedicated part in the process leader course where the participants are asked to reflect on previous experiences and how they wish to use the opportunity with the coming ARK round to accomplish what they want in their own work environment. Third, a manual for the preparation and the survey feedback meeting for follow-up on results from the survey (template for presentations, meetings, and processes). Fourth, the Fact sheet II which is a questionnaire for evaluation of the programme. This questionnaire is partly open-ended and should be filled in also by the line managers and the safety representative together. Again, the rationale behind this is to continue a collaborative discussion and conclude with a common understanding on how it worked and how it can be improved in the next iteration. Fifth, the ARK research platform which is a database with a collection of data from all surveys conducted with the ARK-programme. The database is open for all researchers who can apply for using the data for research by showing a solid research protocol and valid research questions. Finally,

the annual exchange of experience conference where all the users of ARK (e.g., managers, HR/HSE, safety representatives) are invited. The conference is based on various presentations on subjects being raised as relevant for the programme and a large portion of the conference is set aside time for knowledge exchange workshops to promote learning and get inspiration on how to deal with the challenges they are facing working with the ARK-programme.

### ***Initiation phase***

The ARK-programme starts with an initiation phase as preparations and anchoring of an intervention project is crucial for determining how well the process will succeed (Nielsen et al., 2010). The use of ARK aims to be anchored within the health and safety committees and with the union representatives. Further, in this phase, the line managers are involved, and a process plan is established with goals, information plan and choice of process leaders. Training courses are conducted targeting process leaders, safety representatives and head of departments to make sure that everyone is receiving the same training and information and have a higher chance of having a joint mental model of the aim and process of the programme. In an ARK-based study by Christensen et al. (2019), management was found to play a major role in the process by communicating vision of the project and thereby motivation and readiness for change. Management needs to create a clear vision for the organizational intervention for all the stakeholders; what is the process and content, what are their roles, and which effects are anticipated (Christensen et al., 2019).

To facilitate motivation to participate for all stakeholders, knowledge from research findings could be an important contributor showing 1) why it is beneficial to work on improving the psychosocial work environment at the different levels of the organisation within academia to improve both mental health and well-being of the employees and organisational attractiveness and performance (Christensen, 2018; Christensen et al., 2021; Helland et al., 2020; Innstrand

et al., 2022) and 2) how to in best practice based on research following the ARK process trying to understand the factors for a successful intervention process Christensen et al., 2019; Helland et al., 2021a; Helland et al., 2021b).

### ***Screening phase***

The screening phase in the ARK-programme includes both individual and climate measures regarding health promotion and health impairment within the psychosocial work environment (Innstrand et al., 2015; Innstrand & Christensen, 2018). The survey questionnaire, KIWEST, is built on the JD-R model, including both a motivational process activated by job resources and a health impairment process activated by job demands (Bakker & Demerouti, 2007). In the ARK-programme the goal is to cover needs at different levels of the organisation; the questionnaire covers the individual, the climate, and the leader level and the organisational context is covered through the fact sheet 1.

A solid theoretical approach facilitates the understanding of how these concepts are related to each other, and how improvement in various job resources and job demands can contribute to an increase in motivation, well-being, and mental health. For the academic sector, it is also an important point to legitimise the reasoning behind the questionnaires being used. The measures in the KIWEST questionnaire are tailored to the academic context of the organization. In the ARK-programme, the validated survey measures were selected from the Nordic context and from a context for knowledge-intensive workers (Innstrand et al., 2015).

### ***Action planning phase***

In this phase, the aim is to prepare and conduct a feedback meeting where all employees are invited to participate. The purpose of the meeting is to arrive at some defined thematic areas to be improved and preserved based on the results from a survey. The report from the survey forms a basis for discussions about areas of the psychosocial work environment the unit considers important to improve or preserve. The ARK-programme includes a template for the



presentation of the results and group tasks to ensure participation and a bottom-up approach. A video has also been made in order to explain the content of the JD-R model in an academic context explaining the theoretical rationale behind the survey and to ensure that the different stakeholders have a common perception of the theoretical background ([ARK - The job demands-resources model - YouTube](#)). The results from the survey are presented to the employees through spider diagrams and models including means and standard deviations of the different concepts of the psychosocial work environment (See Figure 2 and

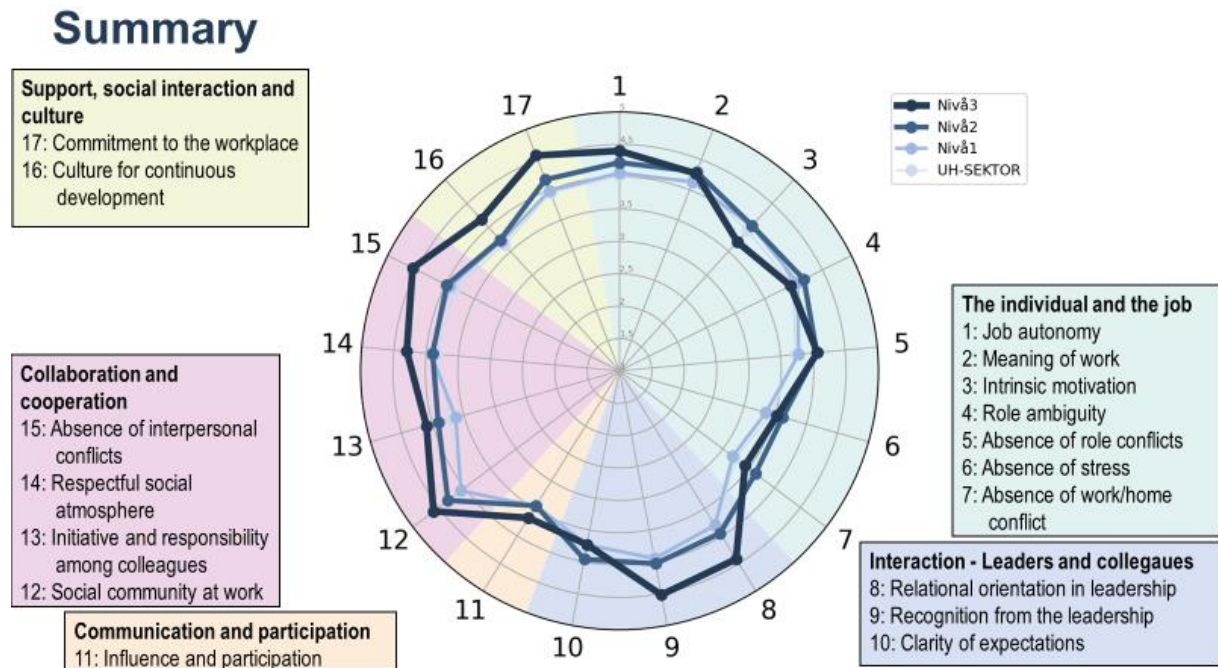
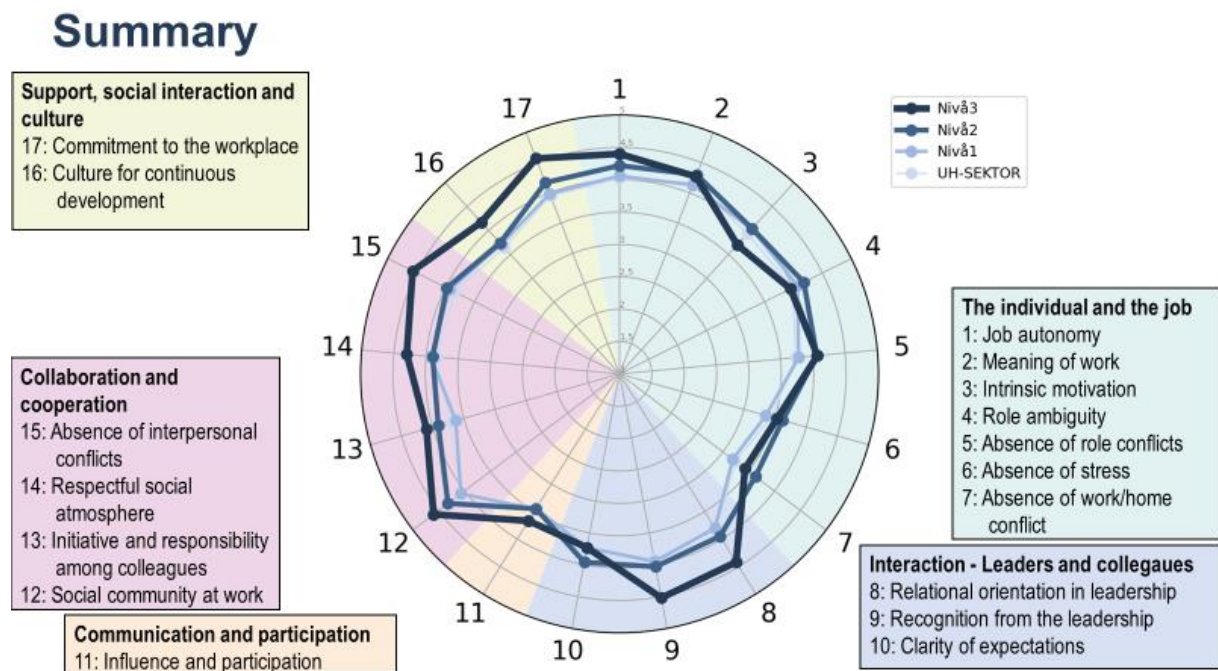
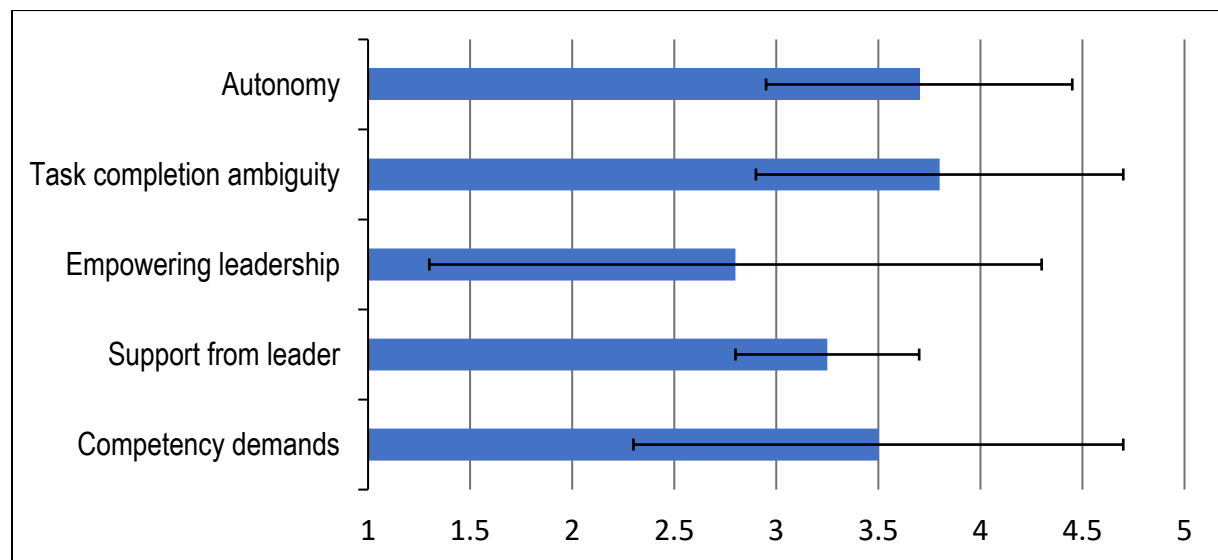


Figure 3). The spider diagram provides information of the national baseline, the university level and faculty level in addition to the department level. It is also possible to get an overview of the development from previous years in the diagram.

**Figure 2: Spider diagram**



**Figure 3: Graph of means and standard deviations**



To validate and interpret the results, the employees start with reflecting individually on the following questions: Which three conditions are you most satisfied with? What three conditions do you think it is most important to improve? The next step is group work where they share

their individual reflections and agree upon four areas, they believe is most important to work with further. Finally, a plenary session is suggested where the groups present what they have come up with to each other and select and prioritize the areas they think are most important to continue working with at the unit.

The thematic areas from the action planning meeting form the basis for the development of concrete actions. The actions must be able to contribute to improvement and/or conservation within the thematic areas. It is the line managers' responsibility to ensure that actions are developed and prioritized in processes where all employees or groups of employees participate and are reflected in a detailed action plan.

### ***Implementation phase***

In the implementation phase, it is the line managers' responsibility to prioritize and implement the suggestions from the previous phase as action plans. The line managers must ensure that the responsibility for the implementation is placed, followed up and communicated. Risk assessment, leader support and a plan for managing the implementation are important aspects to address, especially for the line manager (Christensen et al., 2019). Care must be taken to address the level of change intended (IGLO: Nielsen & Christensen, 2021).

### ***Evaluation phase***

In order to understand what has worked, for whom, under which circumstances, evaluation should take place both continuously during the implementation process and after the cycle has been completed. The ARK-programme gathers quantitative data to monitor the development of the psychosocial work environment over time. The database allows comparisons against a national baseline, other universities including different levels. To fully understand beyond that

something gives an effect it is important to also apply process evaluation to ensure knowledge on how the process actually leads (or not) to the intended outcomes (Nielsen & Noblet, 2018).

### ***Sample, Procedure and Ethics***

The sample consisted of 9,493 responses collected in 2014 (1737), 2017 (2273), 2019 (2593), and 2021 (2890) at one of the largest universities in Norway. All faculties at this university have a dedicated employee in HR (ARK/HSE coordinator) following up on the ARK-work at the underlying departments. These coordinators are working together in a team coordinated by the HSE-coordinator at the central level meeting regularly and sharing experiences.

The individuals were nested within two job positions, with a distribution of 55.4% tenured academic employees (e.g., professors, lecturers) and 44.6% precarious employees (e.g., PhD, postdocs). Responses rates and socio-demographics for each job position are shown in Table 1. The questionnaires were distributed electronically including a link to all employees.

**Table 1:** *Response rates and demographics (N=9.493)*

Participants	Tenured		Precarious	
	N	%	N	%
Response rates	5.011	52.8%	4.482	47.2%
Gender				
Female	2.020	40.3%	2.034	45.4%
Male	2.991	59.7%	2.448	54.6%
Age				
<29	159	3.2%	1.873	41.8%
30-39	814	16.2%	1.954	43.6%
40-49	1.539	30.7%	499	11.1%
50-59	1.436	28.7%	132	2.9%
>60	1.063	21.2%	24	0.5%

The data are aggregated at the unit level including 54 departments (e.g., humanities, social sciences, economics, medicine, health sciences, educational science, architecture, entrepreneurship, art disciplines and artistic activities) and connected over time. The data was then aggregated on unit, time, gender, age, and job position (precarious and tenured) using the aggregate function in R 4.2.0 (R Core Team, 2022). This type of aggregation calculates the average score on the study variables from all employees with the same characteristics. This procedure reduced the (aggregated) sample to 2.069 averaged responses from 2014 (n=464),

2017 (n=512), 2019 (n=540), 2021 (n=553). The `pivot_wider` function from the Tidyr package (Wickham et al., 2023) was used to prepare the data for analysis in Mplus Version 8.5 (Muthén & Muthén, 2020).

The study adhered to ethical standards and was approved by the research ethics committee of the host university. Employees were asked to take part voluntarily, and the confidentiality of their replies was guaranteed according to the Norwegian Centre for Research Data (NSD) regulations. Informed consent was obtained at the beginning of the questionnaire. Respondents indicated whether they consented to the data being used for research purposes.

### ***Measures***

*Meaning of work:* Meaning at work was measured with the Copenhagen Psychosocial Questionnaire (COPSOQ; Kristensen et al., 2005). The scale consists of three items that measure respondent's identification with their actual work tasks using questions like "My work is meaningful". The items were measured using a five-point Likert scale ( $\alpha = .87$ ) ranging from "1 = *To a very low extent*" to "5 = *To a very high extent*".

*Work to home conflict:* Employees' experiences of work to home conflict were measured using a 4-items scale developed by Wayne et al. (2004) and adapted for use in Norway by Innstrand et al. (2009). using questions such as "My job makes me feel too tired to do the things that need attention at home". Responses were measured on a five-point Likert scale ( $\alpha = .86$ ) ranging from 1 "*Strongly disagree*" to 5 "*Strongly agree*". High scores on the items related to work to home conflict indicate that work has a negative impact on home life.

## ***Data analysis***

Univariate descriptive statistics for Meaning at Work and Work to Home Conflict at each time point were calculated. Growth analysis was conducted, using Mplus 8.5, to explore the trajectories of change in Meaning at Work and Work to Home Conflict for each job position (tenured; precarious) over the last decade. Growth analysis is generally used to explain between-subject heterogeneity in growth on a single outcome variable measured at multiple time points (Muthén & Muthén, 2013).

## **Results**

Sample size, means, standard deviations and skewness/kurtosis for each study variable at all time points are shown in Table 2.

**Table 2:** *Univariate descriptive statistics for the study variables*

Study variable	Sample size	Mean	SD	Skewness (Kurtosis)	Minimum	% Min	Maximum	% Max
Meaning at Work								
T1	464	4.126	0.252	-1.505 (7.415)	1.000	0.43%	5.000	6.90%
T2	512	4.232	0.219	-0.688 (2.031)	2.000	0.20%	5.000	6.45%
T3	540	4.289	0.271	-1.069 (3.014)	1.330	0.19%	5.000	15.56%
T4	553	4.313	0.239	-0.868 (1.700)	2.000	0.18%	5.000	15.01%
Work to Home Conflict								
T1	464	3.150	0.402	-0.137 (0.832)	1.000	0.65%	5.000	0.86%

T2	512	3.154	0.434	-0.255 (0.835)	1.000	0.39%	5.000	0.78%
T3	540	2.738	0.672	0.116 (0.005)	1.000	3.33%	5.000	0.93%
T4	553	2.644	0.612	0.207 (0.421)	1.000	4.88%	5.000	0.90%

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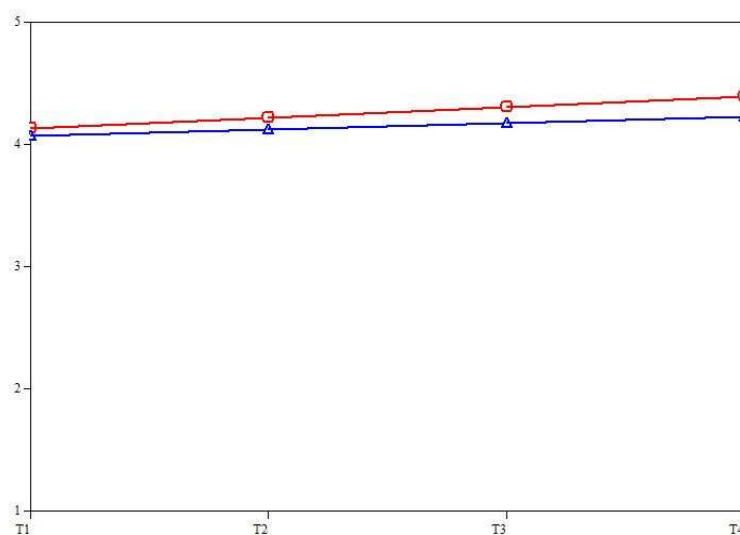
Note: SD = Standard deviation

The univariate growth model was tested to examine change on each of the study variables. A two-factor linear growth model was specified so that the intercept factor served as the starting point for any change across time, and the slope factor illustrated the rate of change of the trajectory over time. The growth curve model examined the trajectory of Meaning at Work across the four-time wave period (see

Figure 4). Even though the values in T1 were already high, the model indicated a significant positive mean for the slopes in tenured ( $\mu_{\text{slope}} = .09$ ,  $p < .001$ ) and precarious ( $\mu_{\text{slope}} = .05$ ,  $p < .001$ ) employees, with the values of the slopes being significantly different from 0. These results suggest an increase in Meaning at Work over time for both tenured and precarious employees, with no statistically significant differences between the positions.



**Figure 4:** *Growth Analysis for Meaning at Work*



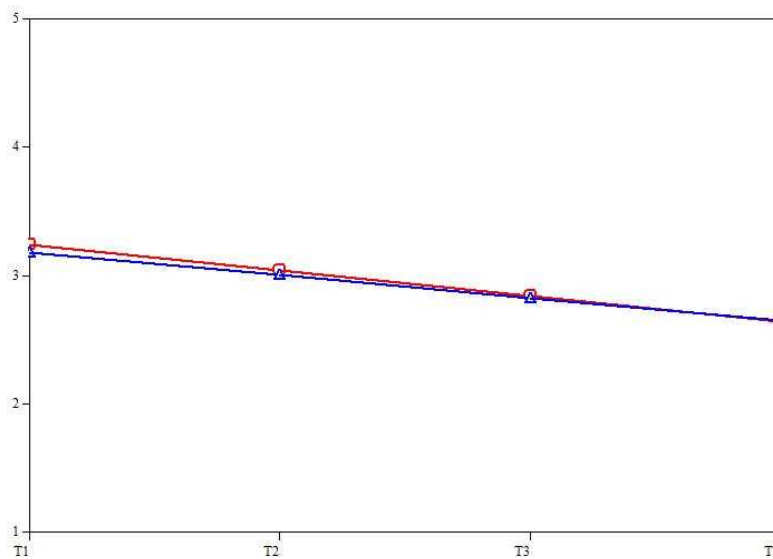
Note. Red line = permanent employees, Blue line = precarious employees

The growth curve model examined the trajectory of Work to Home Conflict over the four-time points period (See

Figure 5). The model indicated a significant negative mean for the slope in tenured ( $\mu_{\text{slope}} = -.20$ ,  $p < .001$ ) and precarious ( $\mu_{\text{slope}} = -.18$ ,  $p < .001$ ) employees, with the values of the slopes

being significantly different from 0, suggesting a decrease in Work-Home Conflict over time. Overall, these results illustrate a positive development of the two variables over time, in both tenured and precarious employees, with no statistically significant differences between both positions.

**Figure 5:** *Growth Analysis for Work to Home Conflict*



Note. Red line = permanent employees, Blue line = precarious employees

## Discussion

Previous research has shown that academics around the world report adverse working conditions (Kismihók et al., 2022; Melin et al., 2014). Academics report low levels of wellbeing and mental health including a decrease in the experience of meaning (Gappa & Austin, 2010) and increases in work to home conflict (Currie & Eveline, 2011). These changes have a negative impact on the individual and organisational performance, which is associated with significant costs (Fredman & Doughney, 2012; Kenny, 2017). Our results suggest that the participatory ARK-programme may promote meaningful work and minimize work to home conflict among both tenured and precarious employees. In the introductory part we emphasized three key principles as important in the ARK programme; participation, the multistakeholder- multilevel approach, and the five phase model for implementation for achieving a change regarding meaning and work and work to home conflict. Through these key principles the ARK-programme enables multiple stakeholders to engage in what they see as problems and what they see as meaningful, and how they can enhance a work-home balance. Making sure everyone is heard creates an ongoing systematic way of creating sustainable change and learning within the organisations.

It could be discussed that the positive development is due to country specific qualities. The Norwegian context might have some advantages due to economy, family friendly policies, and the legislation in The Norwegian working environment act (2006), which stipulates requirements for a safe working environment and has a separate provision on safeguarding the psychosocial working environment. In addition, Norwegian workers have shared attitudes towards work where the responsibility of organizations towards employees is emphasised and the focus on worker health is highlighted (Gustavsen, 2011). Regarding the Norwegian context, earlier research has shown that the Norwegian academics report higher job satisfaction than

academics from many other countries (Kwiek & Antonowitz, 2013). However, research suggests that academics in Norway also experience an increase in adverse working conditions the last decades (Bentley et al., 2010; Torp et al., 2015).

It is interesting to note a positive development for the precarious employees who are the group at most risk for mental health problems (Kismihók et al., 2022; Levecque et al., 2017). A positive development for both groups may be explained by the participatory approach which emphasizes that there is not a one size fits all contexts. Participation is recommended and emphasized by many national guidelines and policies to make use of the knowledge of the employees themselves on interventions fitted for the context and specific challenges and create a buy-in an ownership of the process (Nielsen & Christensen, 2021). The participatory approach may be able to help tailor the intervention to the specific needs of the groups through the ARK-process. Nielsen and Randall (2015) concluded that the interventions should be tailored to the individuals needs and the organizational context. Tvedt et al. (2009) also emphasised the importance on focusing on local norms and organisational diversity to facilitate the implementation process. The focus on multiple stakeholders involved helps secure a common training and understanding of the needs located at different levels of the organization and allocating time and resources from the senior management for the project to work with the five-phase process of ARK ensuring readiness for change at all levels of the organization. In order to maintain a positive development over time there is a need for working systematically and ongoing with the intervention process.

## **Conclusion**

These promising results from a Norwegian university using the ARK- programme suggest that the deteriorating working conditions in academia may be circumvented through the introduction

of participatory, multi-level, multi-stakeholder interventions. The ARK-programme has contributed to placing the psychosocial work environment on the agenda and established a communication channel where the work environment can be discussed. Experiences from working with the ARK-programme shows that it is important to focus both on the content of the intervention but also on the implementation process. The ARK databank gives us general insights on the relationships between demands and resources, and wellbeing and mental health at work in academia in Norway. In addition, the ARK-programme provides valuable knowledge on how to develop and implement tailored intervention programmes in the academic context. The five-phase implementation process is evaluated in each unit at each iteration, offering the opportunity for feedback loops where learning can be gained by attaining new knowledge on what works (or not), for whom under which circumstances. The feedback loops may help build a sustainable improvement process where new knowledge is attained over time, adjustments are constantly being made to suit the local context and practices. Furthermore, where the participants are seeing results of their work and become motivated to continue their work, transfer their knowledge and build a culture for continuous work for a health promoting work environment.

## **References**

American Association of University Professors, AAUP, (2018). Data Snapshot: Contingent Faculty in US Higher Ed.

Anthun, K.S., & Innstrand, S.T. (2016) The predictive value of job demands and resources on the meaning of work and organisational commitment across different age groups in the higher education sector, *Journal of Higher Education Policy and Management*, 38(1), 53-67. <https://doi.org/10.1080/1360080X.2015.1126890>

Bakker, A.B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328.  
<https://doi.org/10.1108/02683940710733115>

Bellamy, S., Morley, C., & Watty, K. (2003). Why Business Academics Remain in Australian Universities Despite Deteriorating Working Conditions and Reduced Job Satisfaction: An intellectual puzzle. *Journal of Higher Education Policy and Management*, 25(1), 13-28. <https://doi.org/10.1080/13600800305740>

Bentley, P., Kyvik, S., Vabø, A., & Waagene, E. (2010). *Forskningsvilkår ved norske universiteter i et internasjonalt perspektiv*. En undersøkelse av 7 land. [Research conditions at Norwegian universities in an international perspective: a survey in 7 countries.]. Oslo: Nifu-Step (report 8/2010).

Chandler, J., Barry, J., & Clark, H. (2002). Stressing academe: The wear and tear of the new public management. *Human Relations*, 55(9), 1051–1069. <https://doi.org/10.1177/0018726702055009019>

Christensen, M., Dawson, J. F., & Nielsen, K. (2021) The Role of Adequate Resources, Community and Supportive Leadership in Creating Engaged Academics. *International Journal of Environmental Research and Public Health*, 18(5).  
<https://doi.org/10.3390/ijerph18052776>

Christensen, M., Dyrstad, J.M., & Innstrand S.T. (2018). Academic work engagement, resources and productivity: empirical evidence with policy implications. *Studies in Higher Education*, <https://doi.org/10.1080/03075079.2018.1517304>

- Christensen, M., Innstrand, S.T., Saksvik, P.Ø., & Nielsen, K. (2019). The line manager's role in implementing successful organisational interventions. *The Spanish Journal of Psychology*, 22. <https://doi.org/10.1017/sjp.2019.4>.
- Currie, J., Eveline, J. E-technology and work/life balance for academics with young children. *High Education*, 62, 533–550 (2011). <https://doi.org/10.1007/s10734-010-9404-9>
- Eby, L.T., Casper, W.J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005) Work and family research in IO/OB: Content analysis and review of the literature (1980–2002), *Journal of Vocational Behavior*, 66(1), 124-197. <https://doi.org/10.1016/j.jvb.2003.11.003>.
- EU-OSHA (2019). *Psychosocial Risks in Europe: Prevalence and Strategies for Prevention*; Publications Office of the European Union: Luxembourg, 2019; Available online: <https://osha.europa.eu/en/tools-andpublications/publications/reports/> Retrieved 10.02.2023
- European Education and Culture Executive Agency, Eurydice, Crosier, D., Birch, P., Davydovskaia, O., et al., (2017). *Modernisation of higher education in Europe : academic staff – 2017*, Publications Office of the European Union, 2017. <https://data.europa.eu/doi/10.2797/9642>
- Foster, S.W., McMurray, J.E., Linzer, M., Leavitt, J.W., Rosenberg, M., & Carnes, M. (2000). Results of a gender-climate and work-environment survey at a Midwestern academic health center, *Academic Medicine*, 75(6), 653-660.
- Fredman, N., & Doughney, J. (2012). Academic dissatisfaction, managerial change and neo-liberalism. *High Education*, 64, 41–58. <https://doi.org/10.1007/s10734-011-9479-y>

Gappa, J. M., & Austin, A. E. (2010). Rethinking academic traditions for twenty-first century faculty. *AAUP Journal of Academic Freedom*, 1, 1-20.

Gappa, J.M., Austin, A.E., & Trice, A.G. (2007). *Rethinking Faculty Work: Higher Education's Strategic Imperative*. San Francisco, CA: Jossey-Bass.

Gustavsen, B. (2011) The Nordic Model of Work Organization. *Journal of the Knowledge Economy* 2(4) 463–480. <https://doi.org/10.1007/s13132-011-0064-5>

Helland, E., Christensen, M., & Innstrand, S. T. (2020) The Relationship between Empowering Leadership, Work Characteristics, and Work Engagement among Academics: A Sem Mediation Analysis. *Scandinavian Journal of Work and Organizational Psychology*, 5(11). <https://doi.org/10.16993/sjwop.84>

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

Helland, E., Christensen, M., Innstrand, S. T., & Nielsen, K. (2021b) Line managers' middle-levelness and driving proactive behaviors in organizational interventions. *International Journal of Workplace Health Management*.  
<https://doi.org/10.1108/ijwhm-08-2020-0136>

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. <https://doi.org/10.1080/13600800500283734>



Innstrand, S. T. (2009). Work/home conflict and facilitation, COR(e) relations: A longitudinal study on work-home interaction in different occupational groups in Norway. Doctoral thesis. Norwegian University of Science and Technology. , 1503-8181; 2009:235 <http://hdl.handle.net/11250/267674>.

Innstrand, S.T., & Christensen, M. (2018). 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, 68 - 76. <https://doi.org/10.1177/1757975918786877>

Innstrand, S. T., Christensen, M., & Helland, E. (2022). Engaged or Obsessed? Examining the Relationship between Work Engagement, Workaholism and Work-Related Health via Work-Home Interaction. *Scandinavian Journal of Work and Organizational Psychology*, 7(1): 1, 1–14. DOI: <https://doi.org/10.16993/sjwop.138>

Innstrand, S. T., Christensen, M., Undebakke, K. G., & 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. <https://doi.org/10.1177/1403494815600562>

Innstrand, S. T., Langballe, E. M., & Falkum, E. (2010). Exploring Occupational Differences in Work-Family Interaction: Who Is at Risk? *International Journal of Stress Management*, 17(1). 38-55. <https://doi.org/10.1037/a0018565>

Jacobs, J. A., & Winslow, S. E. (2004). Overworked Faculty: Job Stresses and Family Demands. *Annals of the American Academy of Political and Social Science*, 596, 104–129. <https://doi.org/10.1177/0002716204268185>

Jenny, G. J., Brauchli, R., Inauen, A., Füllemann, D., Fridrich, A., & Bauer, G. F. (2014).

Process and outcome evaluation of an organizational-level stress management intervention in Switzerland. *Health Promotion International*, 30(3), 573–585.

<https://doi.org/10.1093/heapro/dat091>

Kenny, J. (2017). Academic work and performativity. *Higher Education* 74, 897–913

<https://doi.org/10.1007/s10734-016-0084-y>

Kinman, G. (2001). Pressure points: A review of research on stressors and strains in UK academics. *Educational Psychology*, 21(4), 473–492.

<https://doi.org/10.1080/01443410120090849>

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>

Kristensen, T. S., Hannerz, H., Høgh, A., & Borg, V. (2005). The Copenhagen Psychosocial Questionnaire-a tool for the assessment and improvement of the psychosocial work environment. *Scandinavian journal of work, environment & health*, 438-449.

<https://doi.org/10.5271/sjweh.948>

Kwiek, M., & Antonowitz, D. (2013). Academic work, working conditions and job satisfaction. In U. Teichler & E. A. Höhle (Eds.), *The work situation of the academic profession in Europe: Findings of a survey in twelve countries* (pp. 37–54). London: Springer.

- Kyvik, S. (2013). The academic researcher role: enhancing expectations and improved performance. *Higher Education* 65, 525–538. <https://doi.org/10.1007/s10734-012-9561-0>
- Leung, Tw., Siu, Ol., & Spector, P.E. Faculty Stressors, Job Satisfaction, and Psychological Distress Among University Teachers in Hong Kong: The Role of Locus of Control. *International Journal of Stress Management* 7, 121–138 (2000). <https://doi.org/10.1023/A:1009584202196>
- Levecque, K., Ansee, F., Beuckelaer, A., Van der Heyden, J., & Gislet. L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, 46(4), 868-879. <https://doi.org/10.1016/j.respol.2017.02.008>
- Maslach, C., & Banks, C. G. (2017). Psychological connections with work. Eds. Sir Cary L. Cooper and Michael P. Leiter. *The Routledge Companion to Wellbeing at Work* Routledge *Companion to Wellbeing at Work*, 37-54. London: Routledge. <https://doi.org/10.4324/9781315665979>
- McGuire, L.K., Bergen, M.R., & Polan, M.L. (2004). Career advancement for women faculty in a U.S. school of medicine: Perceived needs, *Academic Medicine*, 79 (4), 319-325. <https://doi.org/10.1097/00001888-200404000-00007>
- Melin, M., Astvik, W., & Bernhard-Oettel, C. (2014). New work demands in higher education. A study of the relationship between excessive workload, coping strategies and subsequent health among academic staff, *Quality in Higher Education*, 20,3, 290-308. <https://doi.org/10.1080/13538322.2014.979547>

Ministry of Labour and Social Inclusion (2006). Act relating to working environment, working hours and employment protection, etc. (Working Environment Act). [Act relating to working environment, working hours and employment protection, etc. \(Working Environment Act\) - Lovdata](#) Retrieved 10.02.2023

Muthén L. K., & Muthén B. O. (2013). *Mplus: Statistical analysis with latent variables. User's guide*. Los Angeles, CA: Muthén & Muthén.

Nicholls, H., Nicholls, M., Tekin, S., Lamb, D., & Billings J. (2022). The impact of working in academia on researchers' mental health and well-being: A systematic review and qualitative meta-synthesis. *PLoS One*, 17(5): e0268890.  
<https://doi.org/10.1371/journal.pone.0268890>

Nielsen, K. (2013). Review article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*, 66(8), 1029–1050. <https://doi.org/10.1177/0018726713477164>

Nielsen, K., & Christensen, M. (2021). Positive participatory organizational interventions: A multilevel approach for creating healthy workplaces. *Frontiers in Psychology*, 12.  
<https://doi.org/10.3389/fpsyg.2021.696245>

Nielsen, K., & Noblet, A. (2018). Introduction organizational interventions: Where we are, where we go from here? In Nielsen, K. & Noblet, A. (Eds.), *Designing, implementing and evaluating organizational interventions* (pp.1–23). London; UK: Routledge.

Nielsen, K., & Randall, R. (2012) The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work & Stress* 26(2), 91–111.

- Nielsen, K., & Randall, R. (2013) Opening the black box: Presenting a model for evaluating organizational-level interventions, *European Journal of Work and Organizational Psychology*, 22:5, 601-617. <https://doi.org/10.1080/1359432x.2012.690556>
- Nielsen, K., & Randall, R. (2015). Assessing and Addressing the Fit of Planned Interventions to the Organizational Context. In: Karanika-Murray, M., Biron, C. (eds) *Derailed Organizational Interventions for Stress and Well-Being*. Springer, Dordrecht. [https://doi.org/10.1007/978-94-017-9867-9\\_12](https://doi.org/10.1007/978-94-017-9867-9_12)
- Nielsen, K., Randall, R., Holten, A-L., & Rial González, E. (2010) Conducting organizational-level occupational health interventions: What works?, *Work & Stress*, 24(3), 234-259. <https://doi.org/10.1080/02678373.2012.682721>
- Nielsen, K., Yarker, J., Munir, F., & Bültmann, U. (2018). IGLOO: An integrated framework for sustainable return to work in workers with common mental disorders. *Work & Stress*, 32, 400–417. <https://doi.org/10.1080/02678373.2018.1438536>
- Pejtersen, J.H., Kristensen, T.S., Borg, V., & Bjørner, J.B. (2010). The second version of the Copenhagen psychosocial questionnaire. *Scandinavian Journal of Public Health*, 38 (3), 8-24. <https://doi.org/10.1177/1403494809349858>
- R Core Team (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.
- Richardson K. M., & Rothstein H. R. (2008). Effects of occupational stress management intervention programs: a meta-analysis. *Journal of Occupational Health Psychology*. 13(1):69–93. <https://doi.org/10.1037/1076-8998.13.1.69>

Torp, S., Lysfjord, L., & Midje, H.H. Workaholism and work–family conflict among university academics. *Higher Education* 76, 1071–1090 (2018).

<https://doi.org/10.1007/s10734-018-0247-0>

Tvedt, S.D., Saksvik, P.Ø., & Nytrø, K. (2009) Does change process healthiness reduce the negative effects of organizational change on the psychosocial work environment?,

*Work & Stress*, 23(1), 80-98. <https://doi.org/10.1080/02678370902857113>

Vostal, F. (2014). Academic life in the fast lane: The experience of time and speed in British academia. *Time & Society*, 24(1), 71–95. <https://doi.org/10.1177/0961463x13517537>

Wayne, J. H., Musisca, N., & Fleeson, W. (2004). Considering the role of personality in the work– family experience: Relationships of the big five to work–family conflict and

facilitation. *Journal of Vocational Behavior*, 64(1), 108–130.

[https://doi.org/10.1016/s0001-8791\(03\)00035-6](https://doi.org/10.1016/s0001-8791(03)00035-6)

Wickham, H., Vaughan, D., & Girlich, M. (2023). *Tidyr: Tidy Messy Data*.

<https://tidyr.tidyverse.org>, <https://github.com/tidyverse/tidyr>.