

**22-23-24 MAY 2019**

**PARIS ISSY-LES-MOULINEAUX**



**CHALLENGES AND OPPORTUNITIES**

**BOOK OF ABSTRACTS**

## SUMMARY

### Keynote presentations

<b>Wellbeing at work in the future of work : lessons based on the European working conditions surveys series</b> <i>Agnès Parent-Thirion, Eurofound</i>	p13
<b>Wellbeing at work in a multicultural perspective</b> <i>Paula Aitkenhead, Schneider Electric</i>	p14
<b>Leading healthy organisational interventions: The role of line managers in making interventions work</b> <i>Prof. Karina Nielsen, Institute of Work Psychology at the Sheffield University Management School</i>	p15
<b>Fit Work Design: The Goldilocks principle of promoting health and wellbeing</b> <i>Prof. Andreas Holtermann, Perosh Network, National Research Centre for the Working Environment</i>	p16
<b>Changing work and worker wellbeing: Which changes matter most? Which Opportunities and challenges are most critical?</b> <i>Prof. Noelle Chesley</i>	p17

### Wednesday, 22th

Nominees for the Young Researcher Award		Auditorium Berlioz Level 2
#148	Organisational change and the psychosocial work environment: A prospective study of the effects on psychosocial work factors following various types of extensive, workplace changes <i>L. Fløvik* (Ms), S. Knardahl (Prof), JO. Christensen (Dr)</i>	p19
#097	Finding fit: an application of a needs-based model of healthy workplaces to wellness program design and participation; <i>I. Thibau* (Ms), C. Winslow (Dr), C. Banks (Dr)</i>	p20
#048	Health differences between multiple and single job holders in precarious employment in the Netherlands <i>S. Bouwhuis* (Mr), G. Geuskens (Dr), C. Boot (Dr), A. Van Der Beek (Prof), P. Bongers (Prof)</i>	p21
#089	Working life expectancy in good and poor self-perceived health among Dutch 55- to 65- year old workers with a chronic disease over the period 1992-2016 <i>A. De Wind* (Dr), M. Van Der Noordt (Mrs), D. Deeg (Prof), C. Boot (Dr)</i>	p22
#212	The influence of occupational physical activity and work-related stress on perceived work ability <i>M. Ketels* (Ms), E. Van Poel (Ms), D. De Bacquer (Prof), A. Holtermann (Prof), E. Clays (Prof)</i>	p23

ORAL COMM: How to fit future work needs		Auditorium Berlioz Level 2
#076	Social media at professional work? Threat or possibility? <i>R. Oksa* (Mrs), M. Kaakinen (Dr), N. Ellonen (Dr), A. Oksanen (Prof)</i>	p24
#118	Supporting wellbeing at work in digital transformation through learning and competence-building <i>K. Heikkila-Tammi (Dr), RL. Larjovuori* (Mrs), L. Bordi (Ms)</i>	p25
#126	Teacher-led development process as a tool to enhance the digitalization of schools and work well-being <i>JP. Mäkiniemi* (Dr), S. Ahola (Dr)</i>	p26
#142	Experiments and intentions of uses during the design of a cobot <i>F. Coutarel* (Dr), M. Dridi (Mr), A. Bonnemain (Dr), S. Rousset (Dr), J. Beaujouan (Dr)</i>	p27

<b>SYMPOSIUM: “Dealing with Industry 4.0 through workplace innovation”</b> F. Pot* (Prof)		<b>Room 6</b> Level 4
#025	Dealing with Industry 4.0 through workplace innovation F. Pot* (Prof)	p28
#034	Paradigms 4.0: towards a better understanding of the impact of Industry 4.0 technologies on work and organization M. Ramioul* (Prof), S. Dhondt (Prof)	p29
#027	Towards a monitor for technology, skills and employment S. Dhondt* (Prof), K. Kraan (Mr), P. Preenen (Dr)	p30
#030	Coping with industry 4.0 in a high-trust environment: digitalization and the transformation of work in Finland T. Alasoini* (Prof)	p31
#028	New digital technologies, organisational choice-making and employee wellbeing: evidence from a survey of senior management C. Warhurst* (Prof), S. Sarkar (Dr), W. Hunt (Dr)	p32

<b>ORAL COMM: Workplace health promotion I</b>		<b>Room Molière</b> Level 3
#055	The effectiveness of workplace health promotion interventions to prevent chronic diseases- A systematic meta-review K. Proper* (Dr), S. Van Oostrom (Dr), J. Lindstrom (Dr)	p33
#165	Workplace health promotion programs: a systematic review of differences in effectiveness between socioeconomic groups D. Van De Ven* (Mr), S. Robroek (Dr), A. Burdorf (Prof)	p34
#215	Workplace physical exercises and musculoskeletal disorders prevention: are they effective? A. Aublet-Cuvelier* (Dr), L. Claudon (Mr), MA. Gautier (Dr), M. Kerlo-Brusset (Dr)	p35
#083	Workplace health promotion: support of an occupational health service to logistics companies in prevention of whole body vibration risk R. Codron* (Dr), V. Mora (Dr), M. Chauvet (Mr), P. Vincent (Mr), S. Fouchy (Mrs), J. Rayer (Mrs)	p36

<b>ORAL COMM: Impacts of merges and other major organisational changes</b>		<b>Room 5</b> Level 4
#064	Downsizing and restructuring in the wake of the economic collapse and the impact on municipal employees in Iceland H. Sigursteinsdottir* (Dr)	p37
#098	Well-being at work: How can an occupational health service support a company during a change of premises and organization? S. Bahiri* (Mrs), R. Codron (Dr)	p38
#020	The contribution of work and lifestyle factors to socioeconomic inequalities in self-rated health- a systematic review A. Dieker (Ms), W. Ijzelenberg (Dr), K. Proper (Dr), A. Burdorf (Prof), A. Van Der Beek (Prof), G. Hulsege* (Dr)	p39
#240	Work-life merge and wellbeing in Australian and UK academics C. Fetherston* (Prof), R. Wei (Dr), S. Batt (Ms), M. Sully (Dr), A. Fetherston (Dr)	p40

<b>ORAL COMM: Evaluation and interventions</b>		<b>Room 9</b> Level 4
#024	Protocol for evaluating a workplace intervention within the framework of consultations for Suffering at Work in French-speaking Switzerland Z. Mediouni* (Dr), C. Barlet-Ghaleb (Dr), M. Zenoni (Ms), M. Rinaldo (Dr), D. Grolimund Berset (Dr), S. Eich (Dr), B. Danuser (Prof), P. Krief (Dr)	p41
#140	Interventions improving mental health of nursing students and novice nurses to prevent drop-out: a systematic review E. Bakker* (Ms), J. Kox (Mr), C. Boot (Dr), A. Francke (Prof), A. Van Der Beek (Prof), P. Roelofs (Dr)	p42
#131	Comprehensive health promotion interventions : evidence from Estonia K. Kuimet (Mrs), M. Järvis* (Dr), J. Korotõts (Ms)	p43
#236	Combating bullying at work in the Netherlands: design and first results from a longitudinal evaluation of an organisational intervention R. Schelvis* (Dr), L. Van Dam (Ms), M. Bakhuys Roozeboom (Mrs), L. Van Der Zwaan (Mr), S. Van Den Bossche (Mr)	p44

<b>WORKBENCH</b>		<b>Room Molière</b> Level 3
#197	Technostress: Where are we now and where do we go from here? L. Van Dam* (Ms), L. Van Der Zwaan (Mr), M. Van Egmond (Mrs), J. Van Den Eerenbeemt (Mr), I. Niks (Ms), L. Hermans (Ms)	p45

<b>ORAL COMM: Returning to work and major exhaustion</b>		<b>Room 5</b> Level 4
#085	Client-related Burnout measured with the Copenhagen Burnout Inventory and self-reported exhaustion. Construct and criterion validity among Swedish Home-Care Personnel A. Lundin* (Dr), I. Målvist (Mrs), M. Forsman (Prof)	p46
#093	Policy and practice initiatives to improve ambulance staff mental health and wellbeing in the United Kingdom: a national picture in a global context K. Sanderson* (Prof), L. Clark (Dr), R. Fida (Dr), J. Williams (Prof), N. Rees (Mr), J. Murdoch (Dr), J. Skinner (Dr), T. Foster (Mrs)	p47
#107	Returning to work and staying at work after sickness absence due to common mental disorders: results from a mixed-methods follow-up study in Germany A. Sikora* (Mrs), G. Schneider (Mr)	p48

<b>ORAL COMM: Psychosocial working conditions and wellbeing in the health sector</b>		<b>Room 9</b> Level 4
#198	Occupational health of personal home-care aides M. Sellapin* (Mr), V. Dodeler (Dr), E. Michinov (Prof)	p49
#179	The relationship between stressful situations and psychological distress in emergency department nurses and the moderating effect of work factors and recovery outside work N. De Wijn* (Ms), M. Van Der Doef (Dr)	p50
#127	Gender, age, and immigration background interaction: impact on work-life balance satisfaction and employee mental health M. Boulet* (Prof)	p51

<b>ORAL COMM : Physical and Psychosocial working conditions and wellbeing</b>		<b>Auditorium Berlioz</b> Level 2
#058	Job resources and wellbeing: longitudinal associations in a nationally representative sample of German employees I. Schoellgen* (Dr), A. Schulz (Ms)	p52
#062	Work-related stress and psychosocial work conditions H. Sigursteinsdottir* (Dr)	p53
#074	Curvilinear connections of effort-reward imbalance with stress and work engagement J. Tanskanen* (Mr), L. Mäkelä (Prof), R. Viitala (Prof)	p54
#057	Prevention of of musculoskeletal disorders using smart workwear C. Lind (Dr), M. Forsman* (Prof), L. Sandsjö (Dr)	p55

# Thursday, 23th

<b>ORAL COMM: To be a "good" leader: conditions to improve leader development</b>		<b>Auditorium Berlioz Level 2</b>
#087	'Being' a leader: value of mindfulness for leader development L. Urrila* (Ms)	p57
#109	The role of the line manager in implementing organisational interventions? experiences from the ARK-programme M. Christensen* (Dr)	p58
#114	How organisational culture and climate affect the leadership-health relationship in the face of change T. Schröder* (Mr)	p59
#123	Resources and constraints related to psychological health: the case of managers in healthcare sector MH. Gilbert* (Prof), J. Dextras-Gauthier (Prof), M. Boulet (Prof), I. Auclair (Prof), J. Dima (Ms)	p60

<b>SYMPOSIUM "Achieving healthier workplace" ST. Innstrand (Prof)</b>		<b>Room Molière Level 3</b>
#128	Achieving Healthier Workplace ST. Innstrand* (Prof)	p61
#130	An integrated, multi-level model of employee health and wellbeing C. Banks* (Dr)	p62
#079	Creating healthy workplaces- the ARK intervention programme ST. Innstrand* (Prof), M. Christensen (Dr)	p63
#119	Developing wellbeing-supporting work practices in the digitalizing work environment L. Bordi (Ms), K. Heikkilä-Tammi* (Dr)	p64
#125	Intervention strategies for healthier workplaces C. Maslach* (Prof)	p65

<b>ORAL COMM: The role of leadership in employees wellbeing at work I</b>		<b>Room 6 Level 4</b>
#108	The empowering leadership as a determinant of psychological wellbeing at work: the predictor role of trust and meaning of the work A. Caillé* (Mrs), C. Jeoffrion (Prof), JM. Galharret (Prof)	p66
#113	Distance with a leader and satisfaction with expatriate job L. Mäkelä* (Prof), H. Kangas (Ms), V. Suutari (Prof)	p67
#139	Diverse effects of leadership and management practices on working conditions and well-being at work: how can we prevent efficiently both mental and physical injuries at workstation? E. Garnier-Daujard* (Dr)	p68
#234	Workplaces' leadership quality and work ability- results from a questionnaire distributed to all Sweden's waste collectors M. Forsman* (Prof), M. Alderling (Mr), SE. Mathiassen (Prof)	p69

<b>ORAL COMM: Wellbeing at work of different groups of workers: young, ageing and low vitality people</b>		<b>Room 5 Level 4</b>
#026	Can untimely late career workplace departures be prevented? A quantitative evaluation of a model of involuntary retirement among publicly-employed Registered Nurses and allied health professionals S. Hewko* (Dr), T. Reay (Dr), C. Estabrooks (Dr), G. Cummings (Dr)	p70
#193	The influence of chronic diseases on exit from paid employment: a longitudinal study with 6 years follow-up among older workers K. Oude Hengel* (Dr), S. Robroek (Dr), I. Eekhout (Dr), A. Van Der Beek (Prof), A. Burdorf (Prof)	p71
#210	The prevalence, seriousness and causes of teenage workers' injuries: the case of Iceland M. Einarsdóttir* (Dr), GL. Rafnsdóttir (Prof)	p72
#218	Do I tell my supervisor? Self-disclosure at work in employees with migraine and its relationship with work adjustments M. Van Der Doef* (Dr), K. Van Der Hiele (Dr)	p73

<b>ORAL COMM: Workplace health promotion II</b>		<b>Auditorium Berlioz</b> Level 2
#151	A evolution in the PRAP training for a construction of an ergonomics culture: the ergoKaizen in MAGNA GETRAGFORD Transmission H. Jakubiec* (Dr), B. Guionie (Mr)	p74
#054	The effects of tailored workplace interventions to reduce sitting : a quasi-experimental pilot study K. Proper* (Dr), J. Shreij (Mr), E. Zantinge (Dr)	p75
#216	Effect of upright sitting postures on users' physical and mental conditions within different work domains M. Nybacka (Ms), AL. Osvalder* (Prof), B. Van Der Doelen (Mr)	p76

<b>ORAL COMM: Psychosocial working conditions and wellbeing I</b>		<b>Room 9</b> Level 4
#059	Changes in job security and mental health: An analysis of 14 annual waves of an Australian working population panel survey AD. Lamontagne* (Prof), T. Too (Dr), L. Punnett (Prof), A. Milner (Dr)	p77
#116	Work intensification and autonomy in the digitized working world- A challenge for the wellbeing of employees? SC. Meyer* (Dr), A. Tisch (Dr), L. Hünefeld (Dr)	p78
#208	Which factors are associated with entrepreneurial wellbeing? A systematic qualitative review S. Ahola* (Dr), JP. Mäkinemi (Dr), S. Nuutinen (Mrs), K. Heikkilä-Tammi (Dr), J. Laitinen (Dr), T. Oksanen (Dr)	p79

<b>ORAL COMM : Burnout and withdrawal behavior</b>		<b>Room 5</b> Level 4
#017	The role of employee self-efficacy in top-down burnout contagion: A multilevel longitudinal study A. Parent-Lamarque* (Prof), C. Fernet (Prof)	p80
#124	The determinants of work withdrawal : the case of cynicism W. Merkouche* (Ms), A. Marchand (Prof), S. Renaud (Prof)	p81
#189	Burnout prevalence and risk factors among Belgian workers estimated by general and occupational physicians L. Braeckman* (Prof), L. D'Hulster (Mr), M. Jemine (Ms), P. Firket (Prof), D. Rusu (Prof), I. Hansez (Prof)	p82

<b>ORAL COMM: Work and health II</b>		<b>Room 6</b> Level 4
#056	Prevalence and characteristics associated with multiple problems among work disability benefit recipients K. Brongers* (Mr), B. Cornelius (Dr), T. Hoekstra (Dr), S. Brouwer (Prof)	p83
#067	Psychosocial factors and self-reported global health in a longitudinal survey S. Boini* (Mrs), M. Grzebyk (Mr), D. Chouaniere (Dr)	p84
#068	Occupational factors associated with perceived mental and physical health in postal workers S. Boini* (Mrs), M. Grzebyk (Mr), M. Dziurla (Mr), A. Radaudeanu (Dr)	p85

<b>SYMPOSIUM "Improving organisational health intervention by integrating process, context, and outcomes" C.Biron</b>		<b>Auditorium Berlioz</b> Level 2
#153	"Improving organisational health intervention by integrating process, context, and outcomes" C. Biron* (Prof)	p86
#227	Interventions leadership is a dynamic role that evolves with the intervention process: Five arguments for a new approach M. Karanika-Murray* (Dr), C. Ipsen (Dr), H. Hasson (Dr)	p87
#154	Psychosocial safety climate as a determinant of implementation in the Quebec Healthy Enterprise Standard C. Biron* (Prof), M. Mondor (Dr), H. Sultan-Taieb (Prof), C. Brisson (Prof), M. Vézin (Prof), F. St-Hilaire (Prof), MM. Mantha-Bélisle (Ms)	p88
#146	How to integrate context, process and outcome evaluation of organisational interventions? Sø. Jaspers* (Ms), IL. Karlsen (Ms), DR. Andersen (Ms), PM. Conway (Mr), J. Dyreborg (Mr), LP. Andersen (Mr), B. Aust (Ms)	p89
#214	Exploring the cultural and strategic organisational context of diversity interventions: The black box between discourse and reality Z. Whysall* (Dr)	p90



<b>ORAL COMM: Global models of wellbeing at work and health</b>		<b>Room 6</b> Level 4
#022	Worker safety, health, and well-being: updating and expanding NIOSH's Total Worker Health® approach S. Tamers* (Dr), LC. Chosewood (Dr)	p91
#086	Contribution of various job title variables in the construction of a job-exposure matrix for the job strain model factors I. Niedhammer* (Prof), A. Milner (Dr), A. Lamontagne (Prof), JF. Chastang (Dr)	p92
#220	Development of a burn-out simulation model based on a complex adaptive system approach using system dynamics and retrospective scenario data GA. Veldhuis (Mr), MH. Van Zwieten (Mrs), IM. Niks* (Dr), J. Bouwman (Dr), N. Wiezer (Dr), HM. Wortelboer (Dr)	p93

<b>ORAL COMM: The role of leadership in employees wellbeing at work II</b>		<b>Room 5</b> Level 4
#033	Revisiting the Value of Respect: Cultivating Wellbeing at Work through Moral Competency L. Sekerka* (Dr)	p94
#122	Job strain, health complaints and work-related wellbeing among public sector line managers. Does social support matter? IJ. Jonsdottir* (Prof)	p95
#078	The need for inclusiveness at work in a changing world ST. Innstrand* (Prof)	p96
#229	Leadership quality and self-assessed work ability in the home-care sector M. Forsman* (Prof), M. Alderling (Mr), I. Målqvist (Mrs), L. Hillert (Dr), A. Bergman Rentzhog (Mrs), C. Lind (Dr)	p97

<b>ORAL COMM: Specific working conditions and wellbeing at work</b>		<b>Room 9</b> Level 4
#159	Outsourcing opportunities and obstacles: how to promote health and safety in workplaces with multiple contractors MP. Van Egmond* (Dr), LN. Hummel (Ms), LM. Van Dam (Ms), EM. De Vroome (Dr)	p98
#049	Distinguishing groups and exploring health differences among multiple job holders aged 45 years and older S. Bouwhuis* (Mr), T. Hoekstra (Dr), P. Bongers (Prof), C. Boot (Dr), G. Geuskens (Dr), A. Van Der Beek (Prof)	p99
#232	Employees' attitude changes regarding work support in Activity-based Flexible Offices over time AL. Osvalder* (Prof), M. Babapour (Dr)	p100
#111	This is so my thing and I have got all support I've needed! Organisational strenghts use support generating positive emotions among teachers utilizing dog assisted pedagogy L. Mäkelä* (Prof)	p101

<b>ORAL COMM: Innovative ways to transform work</b>		<b>Salle Molière</b> Level 3
#051	Applying neuroscience research to boost creativity S. Augustin* (Dr)	p102
#092	Optimization of the Citizen Science approach to the workplace: A qualitative pilot study M. Van Den Berge* (Ms), G. Hulsegge (Dr), S. Tamminga (Dr), K. Proper (Dr), L. Den Broeder (Dr), C. Hulshof (Prof), A. Van Der Beek (Prof)	p103
#185	Coordination issues in multidisciplinary design projects in occupational health service: asymmetries, operational and cognitive synchronization C. Gouvenelle* (Mr), G. Rix Lievre (Prof), F. Coutarel (Mr)	p104
#192	The KivaQ method created a space for reflection- inspiring results in improved employee work wellbeing S. Simola-Ström* (Mrs), IM. Elfving-Gustafsson (Mrs), O. Näsman (Dr)	p105

<b>WORKBENCH</b>		<b>Room 6</b> Level 4
#162	Beyond Frederic Laloux: Organisations' master code V. Grosjean (Dr)	p106

<b>ORAL COMM: Psychosocial working conditions and wellbeing II</b>		<b>Room 9</b> Level 4
#150	The New Zealand Workplace Barometer TA. Bentley* (Prof), D. Tappin (Dr), B. Catley (Dr), K. Blackwood (Dr), K. Bone (Dr), D. Forsyth (Dr), Z. Port (Ms)	p107
#207	How was your day at work? Assessing motivation fluctuations at work using ecological momentary assessment K. Hogenelst* (Dr), R. Schelvis (Dr), K. Knittle (Dr), M. Heino (Mr), N. Hankonen (Dr)	p108
#066	Diversity awareness creates competitive advantages and equal opportunities- The new german check "Diversity-conscious companies" M. Niehaus* (Mr)	p109

<b>ORAL COMM: Workplace health promotion III</b>		<b>Auditorium Berlioz</b> Level 2
#072	The European programme FOOD (Fighting Obesity through Offer and Demand): focus on healthy eating habits promotion in the workplace N. Bertrand (Mrs), R. Leaute* (Ms)	p110
#121	Socio-economic inequalities in worksite health promotion: an individual participant data meta-analysis P. Coenen* (Dr), K. Oude Hengel (Dr), S. Robroek (Dr), C. Boot (Dr), A. Van Der Beek (Prof), F. Van Lenthe (Prof), A. Burdorf (Prof)	p111
#152	Why enterprise and employees are together winners to think about life habits: an experiment in MAGNA GETRAG FORD Transmissions , or how to build a health culture in the enterprises H. Jakubiec* (Dr)	p112

## Friday, 24th

<b>SYMPOSIUM "An integrated approach to workplace mental health: Illustrative examples of promoting positive mental health and wellbeing across diverse occupational settings"</b> KE. Elliott* (Dr), S. Dawkins (Dr)		<b>Auditorium Berlioz</b> Level 2
#045	An integrated approach to workplace mental health: Illustrative examples of promoting positive mental health and wellbeing across diverse occupational settings KE. Elliott* (Dr), S. Dawkins (Dr)	p114
#037	Co-production process and outcomes for knowledge translation in workplace mental health A. Martin* (Prof), E. Warnecke (Prof), K. Sanderson (Prof)	p115
#042	Organisational outcomes from a randomized controlled trial of app-based mindfulness training in an Australian statewide public sector workforce L. Bartlett* (Ms), K. Sanderson (Prof), M. Kilpatrick (Dr), P. Otahal (Mr), A. Martin (Dr), A. Neil (Dr)	p116
#043	Evaluating the impact of a team-level Psychological Capital Intervention for enhanced performance and wellbeing S. Dawkins* (Dr), A. Martin (Prof), M. Quinn (Dr)	p117
#046	Assessing occupational communion and the implications for building resilience in the aged and dementia care workforce KE. Elliott* (Dr)	p118

<b>ORAL COMM: Burnout and suicides</b>		<b>Room Molière</b> Level 3
#213	The impact of workplace social capital on burnout and work engagement: a longitudinal study E. Clays* (Prof), P. Vlerick (Prof), B. Van De Ven (Dr), L. Braeckman (Prof), B. De Clercq (Dr), H. Janssens (Dr)	p119
#228	Job stress and burn-out among Icelandic social workers S. Hrafnisdóttir* (Prof), A. Snorradóttir (Prof)	p120
#102	Evolution of burnout in Belgian companies H. Verlinden* (Ms)	p121
#205	Burnout and the burden of care among home-care personnel A. Lindahl Norberg (Dr), I. Måhlqvist (Ms), M. Alderling (Mr), A. Lundin* (Dr), L. Hillert (Dr), M. Forsman (Prof)	p122



<b>ORAL COMM: Long working hours and breaks from work</b>		<b>Room 9 Level 4</b>
#069	Long working hours and occupational health: Towards a knowledge agenda C. Wessels* (Dr), P. Krauss-Hoffmann (Dr), K. Seiler (Dr)	p123
#039	Antecedents and consequences of work-break-skipping in two representative surveys A. Lohmann-Haislah* (Mrs), J. Wendsche (Dr), A. Schulz (Mrs), I. Schöllgen (Dr)	p124
#021	Shift work and the relation with mental health problems in factory workers G. Hulsegge* (Dr), H. Paagman (Ms), K. Proper (Dr), W. Van Mechelen (Prof), H. Anema (Prof)	p125
#158	The courses of subjective fatigue and objective physical activity during a 2-week-on/2-week-off offshore shift rotation P. Ots* (Ms), V. Riethmeister (Ms), J. Almansa (Dr), U. Bültmann (Prof), S. Brouwer (Prof)	p126

<b>ORAL COMM: Harassment and conflicts at work</b>		<b>Room 5 Level 4</b>
#065	Bullying and harassment among Icelandic teachers H. Sigursteinsdottir* (Dr)	p127
#104	A qualitative analysis of organisational antecedents of workplace sexual harassment I. Thibau* (Ms), C. Winslow (Dr), HK. Cheung (Dr), C. Banks (Dr)	p128
#203	The prevalence of the LMX breaches and their connections with employee work engagement H. Kangas (Mrs), J. Tanskanen* (Mr), L. Mäkelä (Prof)	p139
#230	Sexual harassment at work and the psychosocial work environment following the #metoo movement? result from Iceland A. Snorraddottir* (Prof)	p130

<b>ORAL COMM: Coping with digitalisation and hyperconnectivity</b>		<b>Auditorium Berlioz Level 2</b>
#149	Study on the impact of new forms of work and employment on well-being at work MC. Trionfetti* (Ms), A. Bingen (Prof)	p131
#075	Reflection on the "Right to Disconnect". From the Workplace Through French Legal Framework L. Lerouge* (Dr)	p132
#239	To be or not to be overconnected. From individual difficulties to individual and collective coping mechanisms O. Morand (MS), V. Grosjean*, B. Cahour (Prof), M. E. Bobillier-Chaumont (Prof), B. Paty	p133

<b>ORAL COMM: Physical health and activity</b>		<b>Room 5 Level 4</b>
#144	Extremely time-efficient high-intensity interval training improves cardiometabolic health, work ability and quality of life in obese employees D. Reljic* (Dr), F. Frenk (Ms), HJ. Herrmann (Dr), Y. Zopf (Prof)	p134
#161	Evaluating relationships between the use of dynamic office workstations (DOWs) and wellbeing V. Schellewald* (Ms), J. Kleinert (Dr), R. Ellegast (Dr)	p135
#178	Physical activity at work may not be health enhancing. A systematic review with meta-regression on the association of occupational physical activity with cardio-vascular mortality P. Coenen* (Dr), N. Krause (Prof), M. Huysmans (Dr), A. Holtermann (Prof), W. Van Mechelen (Prof), L. Straker (Prof), A. Van Der Beek (Prof)	p136

<b>ORAL COMM: Intervention and integrated approaches for health</b>		<b>Room 9 Level 4</b>
#060	An integrated workplace mental health intervention in an Australian police context: results of a cluster-randomised trial AD. Lamontagne* (Prof), A. Milner (Dr), A. Martin (Prof), K. Page (Dr), N. Reavely (Prof), A. Noblet (Prof), T. Keegel (Dr), A. Allisey (Dr), A. Papas (Dr), K. Witt (Dr), P. Smith (Prof)	p137
#071	Design of a workplace intervention for promoting employees' recovery during shift work I. Niks* (Dr), A. Van Drongelen (Dr), E. De Korte (Dr), K. Kranenborg (Mrs), N. Wiezer (Dr)	p138
#201	How can streamlined managerial thinking evolve so that wellbeing at work in a changing world becomes a sustainable reality? S. Suarez-Thomas* (Dr), F. Moneger (Dr)	p139

## LIST OF POSTERS

### SESSION I (More details)

N°	Abstract	Title and Author(s)	Page
2	#023	Analysis of safety awareness, accident prevention and implementation of behavior based safety program in energy utility firm M. Hassaan Shoukat (Mr), U. Hussain* (Mr), S. Haider (Mr)	p141
3	#035	Do psychosocial working conditions affect employee self-management of long-term health conditions in the workplace? SE. Hemming* (Mrs)	p142
4	#036	Work ability index and psychosocial work environment in workers from homes for older people T. Ratkajec* (Dr), J. Hren (Mr)	p143
5	#052	Occupational physicians' perspectives on supporting workers with a chronic disease in strengthening self-control: a needs assessment A. Bosma* (Mrs), C. Boot (Dr), F. Schaafsma (Dr), H. Anema (Prof)	p144
7	#070	Does severity of occupational injury predict long term health related quality of life (HRQoL)? S. Jónsdóttir (Mrs), JF. Friðriksson* (Mr), K. Tómasson (Dr)	p145
8	#073	Development of workplaces health risk assessment and management for total health of workers Y. Kaeokaemchan (Ms), P. Anantagunathi* (Ms), C. Chari (Ms), R. Wirichai (Ms)	p146
10	#090	Working conditions and major depressive disorder: a Brazilian population-based study N. Soares Xavier Oenning (Dr), P. Klarmann Ziegelmann (Prof), B. Niegia Garcia De Goulart (Prof), I. Niedhammer* (Prof)	p147
11	#100	Mental health among young workers in the UK: the impact of job quality M. Gilek* (Ms)	p148
12	#112	Does organisational climate moderate the impact of emotional labor on presenteeism in Korean firefighters? HY. Ryu* (Ms), DS. Hyun (Mr), DY. Jeung (Dr), CY. Back (Dr), SJ. Chang (Prof)	p149
13	#117	The linkages between employee well-being and productivity in financial services? case Nordea Bank S. Nuutinen (Mrs), S. Ahola (Dr), J. Eskelinen (Dr), RL. Larjovuori* (Mrs), K. Heikkilä-Tammi (Dr), M. Kuula (Prof)	p150
14	#132	The moderating effect of non-material rewards on the association between emotional labor and suicidal ideation in Korean firefighters DS. Hyun* (Mr), HY. Ryu (Ms), DY. Jeung (Dr), CY. Back (Dr), SJ. Chang (Prof)	p151
15	#138	From research to practice: What affects the implementation of knowledge on work organisation in professional nursing? M. Melzer* (Dr), L. Winkler (Mrs), A. Seidler (Prof), U. Rösler (Dr)	p152
16	#143	Change management: how to preserve employee's health? N. Brosset* (Dr), H. Leloix (Dr), N. Lefebvre (Mrs)	p153
18	#147	The future of work: opportunities and challenges for the nordic models occupational health? consequences and challenges for the future working environment in the nordic countries J. Vleeshouwers* (Dr)	p154
19	#156	New technologies and digital competencies among people with visual impairment in the context of their wellbeing and professional activity K. Pawlowska-Cyprysiak* (Mr), K. Hildt - Ciupinska (Dr)	p155
20	#164	Assessment and perspective of the use of the GABO questionnaire for assessing the sound quality of open offices M. Pierrette* (Dr), P. Chevret (Dr)	p156
21	#171	Works forewomen : advantages and disadvantages to be a woman in a male environment JL. Zylberberg* (Dr)	p157
22	#173	Occupational Musculoskeletal Disorders in Tunisia: Socio-economic and preventive issues T. Khalfallah* (Prof), A. Mahfoudh (Dr)	p158
23	#174	Occupational musculoskeletal disorders in cleaning women: an underestimated risk A. Mahfoudh* (Dr), C. Haj Sassi (Dr), O. Jlassi (Dr), O. Machgoul (Dr), T. Khalfallah (Prof)	p159
24	#175	Permanent night worker and vigilance disorder of nursing staff A. Mahfoudh* (Prof), O. Jlassi (Dr), N. Mars (Dr), L. Bouzgarrou (Dr), I. Rassas (Dr), T. Khalfalh (Prof)	p160
25	#176	Physical and mental quality of life in Tunisian hospital institutions A. Mahfoudh* (Prof), M. Zaidi (Dr), I. Rassas (Dr), T. Khalfallah (Prof)	p161

**SESSION II (More details)**

N°	Abstract	Title and Author(s)	Page
29	#186	Backfit a model of total workers health L. Vigna* (Dr), D. Conti (Dr), C. Barberi (Dr), G. Agnelli (Dr), G. Bernardelli (Prof), MR. Ingenito (Dr), L. Riboldi (Dr)	p162
30	#187	Evaluation of the standing desks provided following the advice of occupational physicians S. Crespo Rica* (Ms), A. Piette (Mr), C. Paternot (Mrs)	p163
31	#194	Burdens and barriers in professional careers of women versus men and their effect on mental health M. Warszewska-Makuch* (Dr), Z. Mockallo (Dr)	p164
32	#195	Well-being at work faced the question of workload L. Ponge* (Mr)	p165
33	#196	Stress in employees working in direct contact with the customer A. Najmiec* (Mr), Z. Mockallo (Ms)	p166
34	#199	Determinants of health behaviour among men active on the labour market K. Hildt-Ciupinska* (Dr)	p167
35	#202	Promoting a healthy lifestyle among low educated shift workers with T2D: a personalized physiological and behavioral approach L. Van Der Zwaan* (Mr), K. Oude Hengel (Dr), W. Otten (Dr), P. Bongers (Prof), N. Wiezer (Dr)	p168
36	#204	Challenge and hindrance job demands and employees' wellbeing. The role of subjective challenge and hindrance appraisal Z. Mockallo* (Ms), M. Widerszal-Bazyl (Dr)	p169
37	#206	Effectiveness of the Labour Inspectorates' enforcement tools to improve work environment and employee health? a cluster randomised controlled trial of Norwegian home care workers AM. Indregard* (Dr), S. Knardahl (Prof), H. Johannessen (Dr)	p170
38	#209	Usability testing of a serious game for Musculoskeletal Disorders prevention M.Zare* (Dr)	p171
40	#217	Shift work-related physical capacity of Tunisian nurses I. Merchaoui (Prof), I. Rassas (Dr), C. Amri (Prof), MA. Henchi (Prof), T. Khalfallah* (Prof), M. Akrouf (Prof), N. Chaari (Prof) L. Bouzgarrou (Prof)	p172
41	#219	Health-related quality of life determinants during tunisian medical internship I. Merchaoui (Prof), I. Rassas (Dr), T. Khalfallah* (Prof), MA. Henchi (Prof), M. Akrouf (Prof), N. Chaari (Prof), C. Amri (Prof)	p173
42	#221	Approved occupational accidents among short-haul drivers - three dimensional distribution of sick leave periods in coded accident-describing variables M. Alderling* (Mr), A. Reiman (Dr), M. Forsman (Prof)	p174
43	#222	Training related moral harassment and mental health outcomes in medical residents I. Merchaoui (Prof), I. Rassas (Dr), H. Mosbah (Dr), C. Amri (Prof), S. Miled (Dr), MA. Henchi (Prof), N. Chaari (Prof), T. Khalfallah* (Prof), M. Akrouf (Prof)	p175
45	#226	Everyday stressors causing distress in the workplace: A systematic review L. Bolliger* (Mrs), J. Lukan (Mr), N. Pauwels (Dr), M. Luštrek (Dr), D. De Bacquer (Prof), E. Clays (Prof)	p176
46	#231	Correlations between work demands-control-support and home-care workers' self-ratings of not being able to work until retirement I. Målvist (Mrs), M. Alderling* (Mr), L. Hillert (Dr), M. Forsman (Prof)	p177
47	#233	Coping with chronic disorders in the workplace: Do age and gender matter? R. Lamontagne* (Ms), A. Delisle (Mr), ME. Major (Prof)	p178
48	#235	Sense of gratitude, self-esteem and meaning in life as factors of quality of life among students in a Nigerian university C. Onuoha* (Dr), E. Idemudia (Prof)	p179

**Authors Index**

p180 - 185



22·23·24  
**MAY** 2019  
PARIS EST-LES-MOULINEAUX



perosh  
PROFESSEUR DES UNIVERSITÉS  
RECHERCHEUR EN PSYCHOLOGIE

inrs  
Institut National de Recherche et de Santé



# Keynote presentations

**Wednesday 22th**      **10:00 – 10:45**      **Auditorium**      **p. 13**

**Wellbeing at work in the future of work : lessons based on the European working conditions surveys series**

*Agnès Parent-Thirion, Eurofound*

**Wednesday 22th**      **13:45 – 14:30**      **Auditorium**      **p. 14**

**Wellbeing at work in a multicultural perspective**

*Paula Aitkenhead, Schneider Electric*

**Thursday 23th**      **09:00 – 09:45**      **Auditorium**      **p. 15**

**Leading healthy organisational interventions: The role of line managers in making interventions work**

*Prof. Karina Nielsen, Institute of Work Psychology at the Sheffield University Management School*

**Thursday 23th**      **14:20 – 15:05**      **Auditorium**      **p. 16**

**Fit Work Design: The Goldilocks principle of promoting health and wellbeing**

*Prof. Andreas Holtermann, Perosh Network, National Research Centre for the Working Environment*

**Friday 24th**      **09:00 – 09:45**      **Auditorium**      **p. 17**

**Changing work and worker wellbeing: Which changes matter most? Which Opportunities and challenges are most critical?**

*Prof. Noelle Chesley*

## Wellbeing at work in the future of work : lessons based on the European working conditions surveys series



Agnès Parent-Thirion, Eurofound

*Agnès Parent-Thirion is senior researcher in the Working life research Unit at the EU Agency Eurofound for the improvement of living and working conditions. Graduate in sociology from the Paris IX-Dauphine and Paris Pantheon Sorbonne Universities, she has been working in the European social research for over 20 years.*

*She's currently in charge of the development, and implementation of comparative European Working Conditions Surveys (EWCS) which paints a wide-ranging picture of Europe at work across countries, occupations, sectors and age groups and allows to help policy actors to address the challenges facing Europe today. The sixth survey, in 2015, interviewed nearly 44,000 workers in 35 countries. The 7th edition is planned for 2020. She is also in charge of the global working conditions project. Her research interests include job quality, the monitoring of working conditions and sustainable work, work organisation, gender, and the future of work. She is involved in a number of research projects on Artificial Intelligence at work, engagement at work, work and health, employment status and job quality.*

Agnès Parent-Thirion on behalf of all the colleagues in Eurofound involved in analysing and preparing the European working conditions surveys (EWCS), will present some results from the last EWCS Edition in 2015.

The European Working Conditions Survey (EWCS) is a *unique comparative survey of workers focussing on work, job quality and quality of working lives*; since its creation in 1991, it has enlarged in topic and country coverage. *Job quality features supports health and well being of workers*. The last analysis of the EWCS analyzed in detail the 7 dimensions of job quality (physical environment, work intensity, working time quality, social environment, skills and discretion, prospects and earnings) and has demonstrated the *association of job quality with quality of working lives* ( work life balance, health and wellbeing, engagement and motivation, skills match and security). This strong relationship suggests that job quality deserve a strong policy focus.

Improving job quality in Europe calls for more rather than fewer, policies, practices and coordinated responses. Progress that can be achieved on each dimension of job quality. And the different policies and practices that can support workers over the course of their working lives should be considered together. The need to look beyond specific national explanations and solutions when devising policy to understand the differences and to support mutual learning between countries will be highlighted.

To better address changes in work, new indicators will be included in the reviewed questionnaire for the 7<sup>th</sup> edition : the use of technology at work, the role of customers, workers participation, explore so called new forms of employment and workers engaged in multiple activities.

## Wellbeing at work in a multicultural perspective



Paula Aitkenhead, Schneider Electric

*In 2010, Henri Lachmann, former Chairman and Chief Executive Officer of Schneider Electric with Muriel Pennicaud, currently minister of Labour in France and Christian Larose, a prominent trade-unionist issued a report for the Prime Minister of France that identifies Wellbeing at work as a strategic issue for French companies. In this report, Wellbeing at Work is seen as able to address the emerging question of Psychosocial Risks and to become a key component of economic performance.*

*Five years later, Schneider Electric decided to include Wellbeing at Work in its strategic agenda 2020. Schneider Electric is the leading company in the Digital Transformation of Energy Management and Automation, with more than 142 000 employees in over 100 countries. Paula Aitkenhead is Global Well-being Program Manager for Schneider Electric worldwide. As such, she works at the core of the design of the Well-being policy of the company. Since 2015, Schneider Electric has received 13 prestigious external awards as Healthiest Employer & Best Employer in the Well-Being Category (European HR Distinction Award, China, USA, India, ...) and has been referenced as a benchmark case study in various books ("The Human Workplace", "New Ways of Working").*

*Paula is very closely implicated in the co-design of the global Well-being strategy of Schneider Electric worldwide. She coordinates the implementation of this strategy which consists of:*

- *The development of the culture of well-being that is considered by Schneider Electric group as a strategic driver of sustainable performance and employee engagement;*
- *The launching of a global crowdsourcing campaign to involve all employees in the co-design of the global well-being program, through a bottom-up approach. She animates the global network of well-being champions across business units & countries;*
- *The implementation of the well-being branding strategy to drive Schneider's employer attractiveness and internal & external recognition as an employer of choice;*
- *The promotion of a bottom-up cultural change through more than 1000 well-being labs in 52 countries and*
- *The co-design, facilitation and implementation of training on physical, mental, emotional and social well-being for all Schneider employees*

Paula will present the well-being program of Schneider Electric, its rationale and some very concrete changes that resulted of this strong commitment of the company on this well-being agenda. She will have the opportunity to present actions issued from various regions of the globe, related to contrasted professional and cultural contexts. Paula will also share with us some good practises being implemented to lead in a digital and global world, enabling employees to work smarter, to work differently, and to free up their energy.



## Leading healthy organisational interventions: The role of line managers in making interventions work



Prof. Karina Nielsen, Institute of Work Psychology at the Sheffield University Management School

*Prof. Karina Nielsen completed her PhD in Applied Psychology at the University of Nottingham, UK in 2003. Since 2003, Prof. Nielsen has published over 60 per-reviewed journal articles. Prof. Nielsen's research interests focus on changing organizations. Her main research area concerns participatory, organizational interventions – from a broad approach perspective. She has developed and tested models for the organizational intervention's design, implementation and evaluation in order to promote employee wellbeing. Related to healthy organization in modern working life, Prof. Nielsen is also interested in how restructuring influences employee wellbeing and what can be done to maintain employee wellbeing in times of change. Highlighting the key role of supervisors in wellbeing of employees, Prof. Nielsen conducted many research on leadership and wellbeing: in times of organizational change or as a way to changing organizations. She is particularly interested in exploring the conditions for "good" leadership. Combining these three areas of interest Prof. Karina Nielsen will give a keynote speech on organizational interventions in modern world of work, addressing the role of line managers in supporting and implementing such interventions.*

Organizational-level interventions, i.e. interventions that aim to change the way work is organised, designed and managed in order to improve employee psychological health and well-being are widely recommended (ETUC, 2004; EU-OSHA, 2010; ILO, 2001). A design with a simple pre-and post-measurement design with randomized controls (the randomized controlled trial, RCT) has been considered the “gold standard” for evaluating organizational interventions, (e.g. Richardson & Rothstein, 2008), however, in recent years, this design has been challenged as it on its own fails to explain “what works for whom in which circumstances” as stipulated by realist evaluation (Pawson & Tilley, 2006; Nielsen & Miraglia, 2017) and models for intervention have been developed that consider the factors that may help or hinder successful implementation (Nielsen & Abildgaard, 2013).

One key player in organizational interventions are line managers (Nielsen & Noblet, 2018). They are often the ones who are tasked with planning, implementing and supporting these interventions. In many intervention models and national approaches to organizational interventions, senior management support is often emphasized (Nielsen & Noblet, 2018), but the role of leaders at the first line level in the organisation has received less attention (Nielsen & Noblet, 2018; Nielsen, 2017). The lack of attention is in contrast to the attention that leaders at this level receive in the current debate and in state-of-the art research on organizational interventions (Nielsen, 2013, Nielsen 2017).

In my presentation, I will present state of the art of the role of line managers in organizational interventions. It has been argued that line managers can either make or break an intervention and they play an important role of leading the way. I will explore what the role of these leaders is and discuss why line managers may “break” and intervention rather than “making it”. I argue that there are important contextual factors that may lead to such behaviours and we need to understand how we can support line managers in making interventions work. In my presentation 1) I review recent process evaluation studies that provide insights into how leaders may make or break an intervention, both in terms of how they may enforce change to ensure successful intervention implementation but also under which circumstances they are able to do so, 2) I argue there is a need to develop our theoretical understanding of how and why leaders can influence the change process; and finally, 3) I discuss how we may proactively integrate the existing knowledge about the role of line managers in future intervention designs.

## Fit Work Design: The Goldilocks principle of promoting health and wellbeing



Prof. Andreas Holtermann, Perosh Network, National Research Centre for the Working Environment

*Andreas Holtermann finalized his master in Human Movement Science in 2002, and PhD in Health Science in 2008 from the Norwegian University of Science and Technology (NTNU), Trondheim, Norway. Since 2008, he has been holding positions as Post-doc, Senior researcher, and currently Professor at the National Research Centre for the Working Environment, Copenhagen, Denmark. NRCWE is one of the 13 Occupational Safety and Health (OSH) institutes connected through PEROSH. Andreas has published more than 200 papers in international peer reviewed journals, supervised 15 phd theses, and given numerous invited lectures at international conferences and seminars. His main field of research is on occupational physical activity and health, and prevention of musculoskeletal disorders at the workplace.*

*Andreas has been a principal investigator on several workplace intervention studies applying participatory ergonomics and physical exercise for promoting health, work ability and well-being among several occupational groups. He has introduced the “Physical health paradox” on the contrasting effects of physical activity during work and leisure on various health outcomes, like cardiovascular disease, musculoskeletal disorders, sickness absence and mortality. Andreas has developed and applied technical diurnal measurement systems for posture, body movements and physical activity during work, leisure and sleep in several cohorts and intervention studies. Recently, he has worked on “the Goldilocks principle” of how work can be designed in different jobs to be “just right” (not too much or too less of physical activity and sedentary time) for directly promoting health, physical fitness and well-being.*

Despite of several preventive efforts at workplaces, several challenges related to working life, such as a high prevalence of musculoskeletal disorders, social inequality in health, an obesity epidemic and an aging workforce are facing organizations and employees. The classic workplace prevention of “preventing harm from high demands at work” by minimizing physical work demands cannot solve these main challenges. Moreover, workplace health promotion is shown hard to sustain and to adopt in occupations with the greatest needs, mainly because it requires time of the employees away from the productive work. A new approach for solving these main challenges of working life is therefore needed. Professor Leon Straker, Svend Erik Mathiassen and I have therefore proposed ‘The Goldilocks Principle’ as a new approach of how productive work can be designed to promote health and physical capacity (Straker, Mathiassen and Holtermann, British Journal of Sports Medicine, 2018, 52:818-819).

Physical (in)activity is well documented to profoundly influences health, physical capacity and well-being, with effects depending on the extent and temporal structure of the (in)activity. Like the porridge, chair and bed that needed to be ‘just right’ for Goldilocks in the fairy-tale of ‘The Three Bears’, physical activity during productive work needs to be ‘just right’ for promoting rather than deteriorating health and capacity. However, in many jobs, the physical activity is either ‘too much/high/frequent’ (e.g. heavy manual labor) or ‘too little/low/infrequent’ (e.g. office workers) to give positive biomechanical and cardiometabolic stimuli for promoting health and well-being. The Goldilocks Principle aims to design the productive work so it 1) “fit” to the resources and needs of the employee and 2) makes the employee more “fit” by performing productive work.

## Changing work and worker wellbeing: Which changes matter most? Which Opportunities and challenges are most critical?



Prof. Noelle Chesley, University of Wisconsin-Milwaukee

*Noelle Chesley is an Associate Professor of Sociology at the University of Wisconsin-Milwaukee, a public, open-access university in the United States. Her research focuses on the role of technological innovation in shaping work and family experiences that influences health and well-being. Her work has identified mechanisms that implicate digital technology in blurring boundaries among social domains, the role of technology in promoting employee well-being or producing distress, and the potential for technology use to reshape family dynamics. She also has interests in the implications of shifting gender roles for work and family life and has conducted studies to better understand the lives of couples in which women are the primary breadwinners and men are the primary caregivers. Her research has been published in a number of scholarly outlets, including *Work, Employment & Society*, *Research in the Sociology of Work, Information, Communication, & Society*, *Journal of Marriage and Family*, *Gender & Society*, and others.*

*Dr. Chesley is a founding member of the TechHealth Initiative at the University of Wisconsin-Milwaukee, launched in Fall of 2017, which aims to harness and develop regional, inter-institutional and transdisciplinary research strength to solve problems at the intersection of health & technology. This initiative draws on intellectual and practice leaders from social, medical, and statistical sciences, and health informatics and computer science, to forge directives aimed at improving health and well-being through technological innovation and intervention. A key aim is to collaborate with government and community organizations, as well as businesses, to further the goal of improved public health aided by effective technologies.*

*Dr. Chesley earned her Bachelor's of Science degree in Economics from the University of Wisconsin-Madison, her Master's in Public Administration from The Maxwell School at Syracuse University, and her PhD from Cornell University. She also completed post-doctoral training at the University of Minnesota. While a graduate student at Cornell she was affiliated with the Cornell Careers Institute, an Alfred P. Sloan Foundation sponsored research center for the study of working families. Prior to her academic career, Dr. Chesley worked for Christensen Associates, an applied economics consulting firm in Madison, Wisconsin.*

A number of social and economic forces are acting in combination in ways that contribute to a rapid pace of change in work settings. Growing global economic inequality, more inter-generational, gender-fluid, and racially integrated workforces, a more chaotic and disrupted system of international governance, and rapid technological change all contribute to faster-paced and less predictable work experiences for many in the global workforce. Among this mix of important influences on contemporary work, rapid technological change often stands out. In this address, I argue that within the shifting socio-technical landscape of work, two important areas of change emerge: 1) The now central role of data science (and data scientists) in shaping work and workplaces, and 2) the implications of algorithms and artificial intelligence for human workers and their work experiences. These changes not only have consequences for workers--and worker well-being--but also for how researchers conduct the social science of work.



22-23-24  
**MAY** 2019  
PARIS ISSY-LES-MOULINEAUX



**Wellbeing**  
at work in a changing world:  
CHALLENGES AND OPPORTUNITIES

perosh  
PROFESIONNELS DE LA RECHERCHE  
OCUPACIONALES, SALES Y EMPRESAS

inrs  
Institut National de Recherche et de Sécurité



© Eva Nivens/PMS

# Wednesday, 22th

**10:45 – 12:15**

**p. 19 – p. 23**

Auditorium **Nominees for the young Researcher Award**

---

**14:35 – 16:05**

**PARALLEL SESSIONS**

**p. 24 – p. 44**

Auditorium **ORAL COMM: How to fit future work needs**

---

Room 6 **SYMPOSIUM: “Dealing with Industry 4.0 through workplace innovation”**

---

Room Molière **ORAL COMM: Workplace health promotion I**

---

Room 5 **ORAL COMM: Impacts of merges and other major organisational changes**

---

Room 9 **ORAL COMM: Evaluation and interventions**

---

**16:30 – 17:30**

**PARALLEL SESSIONS**

**p. 45 – p. 55**

Room Molière **WORKBENCH**

---

Room 5 **ORAL COMM: Returning to work and major exhaustion**

---

Room 9 **ORAL COMM :  
Psychosocial working conditions and wellbeing in the health sector**

---

Auditorium **ORAL COMM:  
Physical and Psychosocial working conditions and wellbeing**

---

## **Organizational change and the psychosocial work environment: A prospective study of the effects on psychosocial work factors following various types of extensive, workplace changes.**

L. Fløvik\*<sup>a</sup> (Ms), S. Knardahl<sup>a</sup> (Prof), JO. Christensen<sup>a</sup> (Dr)  
<sup>a</sup> National Institute of Occupational Health, Oslo, NORWAY  
\* lise.flovik@stami.no

The study elucidates how various types of extensive organizational change influence a comprehensive set of psychosocial work factors previously associated with adverse psychological and somatic health effects amongst employees.

The rate of extensive organizational change is increasing in private and public sectors [1]. Up to two-thirds of large-scale organizational changes do not achieve its intended results [2] and have been associated with undesirable effects such as health complaints, presenteeism, sick leave and lowered productivity [3]. A thorough understanding of why a substantial number of organizational changes are unsuccessful and associated with the aforementioned adverse effects is still pending. One potential mechanism may be how factors in the psychosocial work environment are influenced in organizations going through change. In the current study long-term, prospective associations between exposure to organizational change and detrimental changes in eleven psychosocial work factors were estimated in order to elucidate how organizational change may influence the psychosocial work environment and whether the work environment is more strongly influenced when change is repeated.

The study utilized a prospective, full panel design. Sample consisted of 5217 respondents. All respondents were employed in either public or private enterprises in Norway, representing a wide variety of professions. Two waves of data were collected with a two-year interval. All variables were measured at both occasions, follow-up data were collected two years after the initial measurement. All data were collected using self-administered, online questionnaires. To estimate the prospective associations between organizational change and the psychosocial work factors, general estimating equations (GEE) were utilized as measurements were non-independent as data were nested within organizations and work-units. Ignoring non-independence of measurements may bias estimates, e.g. underestimating the standard error. Regressions were conducted in three steps for all work factors. In Model I, prospective associations between each type of organizational change and each work factor were estimated with no confounders included. In Model II, age, sex, skill level and place of employment were included as confounders, while in Model III, baseline level of the work factor was also included.

Following exposure to *repeated* organizational change, results indicated statistically significant adverse long-term changes in all psychosocial work factors. See table 1. Following *separate* organizational changes, adverse long-term effects were indicated in most, but not all work factors. Statistically significantly adverse changes were indicated in the work factors "empowering leadership", "fair leadership", "job demands", "role clarity", "role conflict", "social climate", "support from co-worker" and "job predictability". For further details, see table 2.

The present study elucidates the potential adverse effects extensive, organizational change may have on the psychosocial work environment and points to which psychosocial work factors that may be the most susceptible for adverse long-term effects following such company changes. In order to implement organizational changes in a healthy and successful way, the present results points to what work factors change management should take into account to secure healthy change process as unfavourable psychosocial work conditions are associated with adverse effects on both employee health and company productivity.

1. EUROFOUND, First Findings: Sixth European Working Conditions Survey: Résumé. 2016, European Foundation for the Improvement of Living and Working Conditions, European Union: Luxembourg: Office for Official Publications of the European Communities.

2. Beer, M. and N. Nohria, Resolving the tension between theories E and O of change. Breaking the code of change, 2000: p. 1-33.

3. Vahtera, J., M. Kivimaki, and J. Pentti, Effect of organisational downsizing on health of employees. The Lancet, 1997. 350(9085): p. 1124-1128.



## **Finding fit: an application of a needs-based model of healthy workplaces to wellness program design and participation**

I. Thibau\*<sup>a</sup> (Ms), C. Winslow<sup>a</sup> (Dr), C. Banks<sup>a</sup> (Dr)

<sup>a</sup> University of California, Berkeley, Berkeley, UNITED STATES

\* ijcthibau@berkeley.edu

**Introduction and Purpose:** Compared to large organizations, small and medium sized organizations often lack the resources needed to identify and implement a wellness program that meets their employees' basic needs (Nelson, Allen, McLellan, Pronk, & Davis, 2015). There is some evidence to suggest that wellness programs improve the health and well-being of employees and as such, this study sought to understand how to more effectively implement and enhance participation in wellness programs within small and medium organizations in particular (Pronk, 2013). We investigated how to engage employees more effectively such that their participation in wellness programs significantly increases and is sustained over a long period. This study employed a needs-based model, based on the work by Maslach and Banks to identify core human needs that determine worker well-being, to guide the research approach (2017). The findings point to the role of the "fit" between what employees value and the organization's ability to deliver value-laden programming in order to increase participation rates in wellness initiatives, and ultimately, workers' well-being and overall ability to contribute to organizational effectiveness.

**Methods:** We conducted 29 focus groups with 205 employees primarily from small and medium sized organizations in various geographic locations and industries across the United States. The purpose of these focus groups was to better understand how organizations of these sizes perceive wellness programs and which factors make a difference in wellness program adoption and employee participation. We conducted one to three focus groups within each organization to learn about their wellness programs or program elements and facilitators and barriers to both implementation of and participation in wellness programs. The focus groups were recorded and transcribed. Themes for facilitators and barriers were developed based on an initial collaborative review of the focus group data, then each transcript was independently reviewed and coded based on these themes. We also profiled eight wellness program types based on the minimum organizational requirements to successfully implement each program. We finally examined the potential fit between wellness program requirements and the opportunities (facilitators) and constraints (barriers) of all organizations, in particular with small and medium organizations.

**Results:** Results reveal several challenges these organizations face, especially leadership support for such programs, knowledge of the connection between wellness programs and employee health, well-being and productivity, and the degree of "fit" between wellness program requirements and organizational resources.

**Conclusion:** We recognize the critical role that intrinsic and extrinsic employee motivations play in enticing workers to participate in and commit to a behavior change program. Increased motivation occurs when core needs are fulfilled by facilitators and not detracted by barriers. In addition, we identified leadership commitment/involvement as a key factor that determines the extent to which organizations can address their facilitators or barriers that may impact core needs and therefore, contribute to wellness program implementation success. We present a novel way to assess wellness program "fit" based on our findings.

1. Nelson, C. C., Allen, J. D., McLellan, D., Pronk, N., & Davis, K. L. (2015). Integrating health promotion and occupational safety and health in manufacturing worksites: Perspectives of leaders in small-to-medium sized businesses. *Work*, 52(1), 169-176. doi:10.3233/WOR-152038

2. Maslach, C., & Banks, C. G. (2017). Psychological connections with work. In C. Cooper & M. P. Leiter (Eds.), *Routledge companion to wellbeing and work*, pp. 37-54. New York, NY: Routledge.

3. Pronk, N. P. (2013). Integrated worker health protection and promotion programs: Overview and perspectives on health and economic outcomes. *Journal of Occupational and Environmental Medicine*, 55(12 SUPPL.), S30-S37. doi:10.1097/JOM.0000000000000031



## Health differences between multiple and single job holders in precarious employment in the Netherlands

S. Bouwhuis<sup>\*a</sup> (Mr), G. Geuskens<sup>b</sup> (Dr), C. Boot<sup>a</sup> (Dr), A. Van Der Beek<sup>a</sup> (Prof), P. Bongers<sup>b</sup> (Prof)

<sup>a</sup> Amsterdam UMC, Amsterdam, NETHERLANDS ; <sup>b</sup> TNO, Leiden, NETHERLANDS

\* stef.bouwhuis@tno.nl

**Background.** Precarious employment, defined as ‘a state of disempowerment in the employment situation resulting in loss of control and insecurity regarding job and income’ is associated with poor health. Among employees in precarious employment, those with multiple jobs may face additional health risks. For instance, because they have to combine precarious jobs, that generally are characterized by limited freedom regarding working hours. In addition, multiple job holders relatively often have temporary contracts, which may make them even more vulnerable to job insecurity than other employees in precarious employment. Our research question is: do differences in health exist between multiple and single job holders in precarious employment? In addition we will address the following research question: among employees in precarious employment, do differences in health exist between combination multiple job holders (multiple jobs as an employee) and hybrid multiple job holders (one or more jobs as an employee and self-employed) on the one hand, and single job holders on the other hand?

**Methods.** Participants in the Netherlands Working Conditions Survey 2012 aged 25-64 years who were not employed through the Act on Social Work Provision and who had a precarious job were included. To select employees in precarious employment, latent class analysis was performed, using variables based on seven dimensions of precarious employment described by Van Aerden et al (2014): (1) employment stability; (2) material rewards; (3) workers’ rights and social protection; (4) working time arrangements; (5) employability opportunities; (6) collective organization; and (7) interpersonal power relations. Two MJH variables were created: one dichotomous variable distinguishing multiple job holders from single job holders and one categorial variable distinguishing combination multiple job holders, hybrid multiple job holders and single job holders. Differences in general self-perceived health, burnout complaints, musculoskeletal health, and sickness absence (>5 days in the past 12 months) between multiple and single job holders were studied cross-sectionally using logistic regression analyses. Crude as well as adjusted (for gender, age, educational level, contract type, involuntary part time work, uncompensated overtime, ability to determine working hours, autonomy, and bullying) analyses were performed.

**Results.** Employees in precarious employment (N=3,609) experienced significantly worse health than other employees. No significant differences were found between multiple and single job holders in precarious employment for self-perceived health, burnout complaints, and musculoskeletal health in adjusted analyses. In addition, in adjusted analyses no statically significant differences were found between combination MJH and single job holding and between hybrid MJH and single job holding.

**Conclusions.** Among employees in precarious employment, no statistically significant health differences between multiple job holders in general, combination multiple job holders, hybrid multiple job holders and single job holders were found. Therefore, the results of the present study suggest that policies and interventions aimed specifically at multiple job holders in precarious employment may not be needed. Longitudinal research on the relation between MJH and health in (other) groups of employees is recommended to increase our knowledge on the relation between MJH and health.

1. Van Aerden K, Moors G, Levecque K, Vanroelen C. Measuring employment arrangements in the European labour force: a typological approach. Soc Indicators Res. 2014;116(3):771-91.

## **Working life expectancy in good and poor self-perceived health among Dutch 55- to 65- year old workers with a chronic disease over the period 1992-2016**

A. De Wind<sup>\*a</sup> (Dr), M. Van Der Noordt<sup>b</sup> (Mrs), D. Deeg<sup>b</sup> (Prof), C. Boot<sup>b</sup> (Dr)

<sup>a</sup> Radboud University, Nijmegen, NETHERLANDS ; <sup>b</sup> Amsterdam UMC, VU University, Amsterdam, NETHERLANDS

\* a.dewind@psych.ru.nl

### **Objectives**

Several governments have taken measures to encourage prolonged working. As there are fewer possibilities to leave the labour market early it is likely that also older adults with a chronic disease are required to work longer. The question arises whether these workers are working more years in good or in poor self-perceived health, which can be examined with the working life expectancy measure. This study examines to what extent working life expectancies in good and poor self-perceived health changed between 1992 and 2016 in workers with a chronic disease from age 55 onwards.

### **Methods**

Three cohorts (1992, 2002, 2012) of workers with a chronic disease aged 55-65 years were selected from the Longitudinal Aging Study Amsterdam (LASA) with a three-year follow-up each (n=705). A three-state survival model was estimated, modelling transitions between states 'working with good self-perceived health', 'working with poor self-perceived health', and 'exit from work'. Working life expectancies were estimated using Multistate Modelling and Estimating Life Expectancies using Continuous Time in R.

### **Results**

Of the workers with a chronic disease, total working life expectancies at age 55 were 5.2, 5.7, and 6.8 years in cohorts 1992, 2002 and 2012, respectively. Workers initially having poor self-perceived health, had total working life expectancy of 4.7 years of which 2.4 years in poor self-perceived health in cohort 1992. These workers had total working life expectancy of 5.2 years of which 3.3 years in poor self-perceived health in cohort 2002, and total working life expectancy of 6.5 years of which 3.6 years in poor self-perceived health in cohort 2012.

### **Conclusions**

Workers with a chronic disease extended their working lives by approximately 18 months from 1992 to 2016. In the first decade, unhealthy working life expectancy increased, whereas in the second decade, healthy working life expectancy increased, among both workers in general and workers initially having poor self-perceived health. Now that working (longer) with health problems becomes more common, it becomes increasingly important that employers support this group of workers to prolong their working lives. Also, healthy and unhealthy working life expectancy may be valuable information in the future debate on prolonged working of vulnerable groups in the labour market.

## The influence of occupational physical activity and work-related stress on perceived work ability

M. Ketels<sup>\*a</sup> (Ms), E. Van Poel<sup>a</sup> (Ms), D. De Bacquer<sup>a</sup> (Prof), A. Holtermann<sup>b</sup> (Prof), E. Clays<sup>a</sup> (Prof)

<sup>a</sup> Ghent University, Department of Public Health and Primary Care, Ghent, BELGIUM ; <sup>b</sup> National Research Centre for the Working Environment, Copenhagen, DENMARK

\* margo.ketels@ugent.be

### Introduction

In the current labor system many workers are still exposed to heavy physical demands during their job. In contrast to leisure time physical activity (LTPA), occupational physical activity (OPA) is associated with an increased risk of cardiovascular diseases and all-cause mortality. In addition to the physically demanding tasks, also work-related stress is known to impact workers' health. OPA and work-related stress do not only have an influence on workers' health, but also on worker's perceived work ability (PWA). PWA is an important factor influencing the risk of long-term absenteeism, early retirement and work disability. This study aims to investigate the underlying factors of PWA and will focus in particular on the influence of OPA and work-related stressors on PWA.

### Methods

In our cross-sectional field study 329 workers employed at four different companies in Belgium were included. The group comprised 139 men and 190 women. Participants filled in a questionnaire about their subjective perception of current work ability, by rating the Work Ability Score (WAS), and answered a question whether they would still be able to do their job at the age of 60. Participants furthermore reported about three different work stressors (job demands, job control and social support), using the Dutch version of the Job Content Questionnaire. Objective measures of OPA, using the Axivity AX3 accelerometers, were registered during an average of 3 consecutive days in order to calculate the amount of moderate to vigorous physical activity during working hours. Multiple logistic regression analyses adjusted for possible confounding variables and Spearman correlations were used to analyze the data.

### Results

After adjustment for age and gender, OPA was a negative significant predictor of PWA at the age of 60 ( $p < 0.01$ ). In other words, the higher the OPA, the less likely workers perceived to be able to continue their job later on. Of the three psychosocial variables, only social support had a trend to be a positive significant predictor of PWA at the age of 60 ( $p < 0.10$ ). The results revealed that people with a higher social support had a higher chance of sustaining their current job at a later age. The results of the Spearman correlations showed a positive relation of WAS with job demands ( $r = 0.185$ ;  $p < 0.01$ ) and job control ( $r = 0.154$ ;  $p < 0.01$ ), but not with OPA.

### Conclusion

Our study investigated whether OPA and psychosocial parameters predict PWA at the age of 60. OPA showed to be a strong predictor of PWA at an older age. Workers who experience high physical demands in their current job had a lower chance to sustain in that particular job. In contrast, people with higher social support are more likely to continue their job in the future. These findings suggest that social support can have a counterbalancing role in the harmful effect of physical work demands on work ability. Furthermore, the results of this study suggest that current PWA is higher in active jobs, i.e. professions with high job demands and high job control.

## Social media at professional work – threat or possibility?

R. Oksa<sup>\*a</sup> (Mrs), M. Kaakinen<sup>a</sup> (Dr), N. Ellonen<sup>a</sup> (Dr), A. Oksanen<sup>a</sup> (Prof)

<sup>a</sup> University of Tampere, Tampere, FINLAND

\* reetta.oksa@uta.fi

The aim of this social psychological research is to analyze how professional usage of social media is associated with young adults' work engagement. Young adults, the generation born in the 1980s and 1990s, have used the Internet throughout their childhood and adolescence and have actively taken part in different online networks. The professional social media usage refers to the use of social media by the employees in their current work place, the creation and maintenance of useful social networks and following, producing or sharing content related to work or the organization. The professional usage of social media can occur both in general social media services (e.g. LinkedIn) and in internal corporate platforms (e.g. Yammer). Work engagement is a long-term and broad affective-cognitive work-related state of mind that allows employees to express themselves physically, cognitively and emotionally in their work roles. Work engagement is a key concept of positive wellbeing at work, and more effort has been made to support it in the organizations. The association of work engagement with professional social media usage is studied with the Job Demands-Resources model (JD-R model). The JD-R model has been widely used in explaining work engagement and other aspects of occupational wellbeing. This research aims to point out how professional social media usage relates to job resources (e.g. social support) and job demands (e.g. disturbance of concentration) and how those affect the experienced employee work engagement. Personal aspects (e.g. social media skills) and organizational social media guidance and practices (e.g. freedom of choice to use) can increase the experienced job resources or job demands. The research includes an online survey of five expert organizations. In addition, a national comparison survey is conducted among young working adults. The 15-minute online survey discovers professional social media usage broadly. Work engagement is measured with the Utrecht Work Engagement Scale (UWES). Additional questions regarding job demands and job resources are included. The analyses are conducted with multivariate methods. The study gives a comprehensive view on how young adults use social media at work and how it is associated with their work engagement and wellbeing overall. The results provide organizations with important information on how social media can be utilized to promote wellbeing at work and how to avoid the risks involved. The research also provides new information on societal level of social media usage in the work context.

1. Leonardi, P.M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1-19.
2. Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging occupational, organizational and public health: A transdisciplinary approach* (pp. 43-68). New York, NY: Springer Science + Business Media.
3. Terjesen, S., Vinnicombe, S., & Freeman, C. (2007). Attracting Generation Y graduates: Organizational attributes, likelihood to apply and sex differences. *Career Development International*, 12 (6), 504-522.

## **Supporting wellbeing at work in digital transformation through learning and competence-building**

K. Heikkila-Tammi<sup>a</sup> (Dr), RL. Larjovuori\*<sup>a</sup> (Mrs), L. Bordi<sup>a</sup> (Ms)

<sup>a</sup> Tampere University, Tampere, FINLAND

\* riitta-liisa.larjovuori@uta.fi

The megatrend of digitalization is influencing business and working life dramatically. It has been argued that entire lines of work, professions and work roles will disappear and existing jobs are undergoing major changes. Because of this development, there is a continuous need for renewal and new competences in organizations. In the changing work, learning also has an important role in supporting employee wellbeing, as it may for example enhance motivation, a sense of control and mastery at work, as well as employees' self-efficacy. There seems to be a lot of interest in finding out what kind of competences are needed, but how the competences are acquired and developed has not been addressed to the same extent.

The research theme of this study is the renewal of the organizations in digital transformation. The more specific research questions are: What kind of competences are needed in the digital transformation? How does the learning take place at the workplace?

The study includes eight Finnish organizations from the service sector. The data consists of 46 interviews of company representatives from six private companies (insurance, banking, consulting, real estate management, financial administration services and retail) and two public organizations (tax administration and pension insurance). The interviewees represent organizations' top management, marketing, service development, IT-services and human resources.

The main theme of the interviews was the competences needed in digital business transformation and what it means in practice in the organizations. All the interviews were recorded and transcribed. Qualitative content analysis of the interview data was conducted in order to recognize how the informants address learning and the need for new competences in relation to the digital business transformation. The data was analyzed in two phases. At first, all the interview discussions on competences and learning were selected. Two researchers read them through individually and formed categories applying content analysis. They discussed the differences and formed categories based on mutual understanding.

The analysis revealed four main categories, which mirror the new competences needed in the organizations. They are related to use and utilization of technology, to customers, to interaction and to ability to change. The findings also indicate that both the perception and the current state of digitalization-related learning and competencies vary between organizations. The interviewees described several ways of how to acquire new competences. The main categories included formal training, self-directed learning and the need for creating a new kind of learning culture in the organization. There seems to be challenges related to competences in many workplaces. The lack of right ones has a negative effect on wellbeing at work according to interviewees.

## Teacher-led development process as a tool to enhance the digitalization of schools and work well-being

JP. Mäkineniemi\*<sup>a</sup> (Dr), S. Ahola<sup>a</sup> (Dr)

<sup>a</sup> Tampere University, Tampere, FINLAND

\* jaana-piia.makiniemi@uta.fi

### Introduction

Digitalisation is a global megatrend in the educational sector. Some teachers perceive digitalisation of schools and teaching as a demanding aspect of their job (Syvänen, Mäkineniemi, Syrjä, Heikkilä-Tammi, & Viteli, 2016). Thus, there is a need for new methods and approaches to create solutions for decreasing technostress and supporting technology-related employee well-being. Therefore, the aim of the project was to increase and enhance digitalization of schools and teacher well-being simultaneously with the method of teacher collaboration in Finland.

### Participants

Fifteen Finnish comprehensive and general upper secondary schools from four municipalities participated in a participatory action research project. Chief education officers from municipalities were asked about their willingness to take part in the study. Officers then selected the schools. The study procedures followed the key features of the action research paradigm, being, for example, participative by nature, and oriented to making improvements in practices by the participants.

### Developmental process and data collection

First, all teachers and principals of the schools were asked to answer to a web-based baseline questionnaire concerning the use of ICT in teaching and well-being at work (e.g. level of technostrain, technology-related self-efficacy and technology-related collegial support). A total of 183 teachers and principals completed the questionnaire. The school-specific results were then delivered and presented to the participating schools and discussed briefly. After this, researchers asked teachers to form a developmental group and have a first meeting. The aim of each developmental group was to start a teacher-led developmental process for enhancing digitalization (i.e. use of educational technologies) and teacher well-being simultaneously. Altogether eleven developmental groups were organized having 47 participants. After the independent developmental work phase, which lasted about five months, all developmental groups were focus group interviewed. Altogether 45 participants (27 females and 18 males) took part in the semi-structured focus group interviews. The questions concerned different aspects of the developmental work (e.g. What kind of benefits, if any, for the wider school community were noticed). Finally, all teachers and principals of the schools were asked to answer to a follow-up questionnaire. A total of 119 teachers and principals completed the pre- and post-questionnaires.

### Data-analysis

The qualitative data was analysed with inductive qualitative content analysis. The quantitative data were analysed with statistical methods. A paired samples t-test was conducted to examine the within-group differences between the two time points.

### Results

The findings from the focus group interviews indicated that teachers perceived that their technology-related competencies and expertise improved, and they felt more encouraged to try new educational technologies. The participants described having received help, advice and social support from colleagues more often. Collaboration created a feeling of togetherness, and more teachers took responsibilities in supporting the use of educational technology. The results of the pre-post-test indicated that, for instance, technology-related collegial support, technology-related self-efficacy and technology-related autonomy increased, but the level of technostrain remained the same.

### Discussion

Results indicate that developmental process basing on the teacher collaboration can enhance digitalization of schools and support antecedents (e.g. collegial support and self-efficacy) of teacher well-being.

1. Syvänen, A., Mäkineniemi J-P, Syrjä S., Heikkilä-Tammi K., & Viteli J. (2016). When does the educational use of ICT become a source of technostress for Finnish teachers? Seminar.net. International Journal of Media, Technology & Lifelong Learning.



## Experiments and intentions of uses during the design of a cobot

F. Coutarel<sup>\*a</sup> (Dr), M. Dridi<sup>a</sup> (Mr), A. Bonnemain<sup>a</sup> (Dr), S. Rousset<sup>a</sup> (Dr), J. Beaujouan<sup>a</sup> (Dr)

<sup>a</sup> ACTé, Université Clermont Auvergne, Aubière, FRANCE

\* Fabien.Coutarel@uca.fr

This project address following research question : how to assess future acceptance of technological design ? Many researches and empirical feedback show that good acceptability measures durant the design process are usually followed by lower (or bad) acceptance in real world of ecological uses. The purpose of our research is to understand this contradiction and our postulate is as follows: the acceptability assessments are mainly carried out outside the context of use, and some decisive components of future acceptance are difficult to simulate. Our study aims to highlight these components.

To understand the dimensions of acceptability that can be fairly easily evaluated in an experimental context and those that pose problems we have integrated an experiment around the use of a new cobot, during a picking task. The cobot automatically follows the operator and carries the packages he has deposited on robot.

This experiment took place in 3 stages:

- First phase: learning the task of order picking with a manual trolley through the realization of 10 orders;
- Second phase: learning how to operate the robot by performing 1 command;
- Third phase: realization of 10 commands with the robot, with 7 commands that incorporated into the environment obstacles hindering the operation of the robot.

The evaluation of acceptability was carried out following these 3 phases using the UTAUT 2 questionnaire (Venkatesh, Thong and Xu, 2012). To give participants the opportunity to express explicitly their inability to answer a question, we changed the value scale by replacing the "neutral" box in the middle with "do not know how to answer".

Overall, the results show that the use of the robot leads to an evolution, mostly positive and less frequently negative, of the participants' acceptability, which reinforces the idea of the need to put in a situation of use the operator to better appreciate its future acceptance of the technology.

The results also show that acceptability decreases significantly when hazards that simulate real probable situations are introduced.

Otherwise, we also note that some important dimensions of acceptance (Bobillier-Chaumon, 2016) are difficult to assess through our experimentation, particularly the relational and identity dimensions, where people have more frequently meant that they were not able to answer.

These results may confirm the interest of experiments in measuring a number of variables, but also 2 needs :

- to integrate to experiments some hazards from experienced occupational difficulties
- to associate experimental conditions with conditions and / or methods which can integrate or simulate more satisfactorily relational and identity dimensions of human experience, such as case studies.

These perspectives could be major issues in the processes of acceptance of new technologies, and, so, to predict and, more precisely, to build this acceptance. If innovation is an invention that really change uses, innovation processes has to become subjective and social processes.

1. Venkatesh, V., Thong, J.Y.L., Xu, X. (2012) Consumer acceptance and use of information technology : extending the unified theory of acceptance and use technology. Forthcoming in MIS QUarterly, 36 (1), 157-178

2. Bobillier Chaumon, M.E. (2016). Acceptation située des TIC dans et par l'activité : Premiers étayages pour une clinique de l'usage. Psychologie du Travail et des Organisations, 22 (1), 4?21

## **Symposium 'dealing with Industry 4.0 through workplace innovation'**

F. Pot\*<sup>a</sup> (Prof)

<sup>a</sup> Radboud University, Leiden, NETHERLANDS

\* frank.pot@ardan.demon.nl

Industry 4.0 has become the title for robotization and digitalization in manufacturing as well as other branches. The dominant approach is technological innovation with little attention for organizational choice, job quality, wellbeing at work and the involvement of employees and their representatives.

The symposium focuses on

- a) the (potential) positive and negative effects of Industry 4.0 for wellbeing at work and
- b) how employees and their representatives can be involved in (re)designing work.

*Organizer and Moderator*

- Professor Frank Pot (Radboud University, the Netherlands)

*Speakers*

- Professor Monique Ramioul , Research Institute for Work and Society (HIVA) (Belgium)

**Paradigms 4.0: towards a better understanding of the impact of Industry 4.0 technologies on work and organization**

- Professor Steven Dhondt, TNO (the Netherlands), University of Leuven (Belgium)

**Towards a monitor for technology, skills and employment**

- Professor Tuomo Alasoini, FIOH (Finland)

**Coping with Industry 4.0 in a high-trust environment: digitalization and the transformation of work in Finland**

- Professor Chris Warhurst, University of Warwick (UK)

**New digital technologies, organisational choice-making and employee wellbeing: evidence from a survey of senior management**

**All abstracts will be submitted separately**

1. Oeij, P.R.A., Rus, D., & Pot, F.D. (eds.) (2017). Workplace Innovation: Theory, Research and Practice (volume in the 'Aligning Perspectives on Health, Safety and Well-Being' series). Cham: Springer (ISBN 978-3-319-56332-9)

## Paradigms 4.0: towards a better understanding of the impact of Industry 4.0 technologies on work and organization

M. Ramioul\*<sup>a</sup> (Prof), S. Dhondt<sup>b</sup> (Prof)

<sup>a</sup> KU Leuven, Leuven, BELGIUM ; <sup>b</sup> CESO-KU Leuven, TNO Leiden, Leiden, NETHERLANDS

\* monique.ramioul@kuleuven.be

Paradigms 4.0 will develop a scientific framework, integrating critical questions concerning the impact of **Industry 4.0** on organizations, workplaces, employment relations and workers. Current state-of-the-art research acknowledges that current and future developments in digitalization and cyber physical systems will have a deep and disruptive impact on society (Brynjolfsson & McAfee, 2014; Frey & Osborne, 2013). However, there is an increasing number of contradicting studies about how the impact of disruption will and should go about, especially when thinking about societal aims like the quality of working life and sustainable employment relationships.

Paradigms 4.0 will fill the scientific knowledge gap that is present in both research programmes and policy debates on the digitalization of (manufacturing) industries. This is imperative to ensure that new Industry 4.0 technology applications will foster societal aims, while at the same time cradle high performance organizations. There is a current lack in understanding among policy makers, industrialists and social partners how such technology should be embedded within the organizational settings in such a way that employment levels and quality of employment (in terms of better and more performant work) are safeguarded at the same time. To this aim Paradigms 4.0 will re-assess the current state-of-the-art on tasks, jobs and work experience research and to formulate a new, more adapted approach. The approach will be tested in a major data collection in Flanders (Belgium).

The scientific objectives of this project are:

1. To develop an integrated perspective on the relation between innovative technologies, production structure and job design.
2. To develop an integrated perspective on employment relationship elements in automated work environments.
3. To develop a comprehensive conceptual framework of factors supporting quality of working life, wellbeing at work and organizational performance in automated work environments.
4. To develop innovative methods for measuring the labour market impact of technological innovations.

The methodology is chiefly based on cross-case comparisons (within sectors; between sectors), but also conceptual studies and surveys are developed. The active participation of stakeholders from business, industrial relations and policy fields is embedded in the research project and will be a benchmark of its success.

1. Brynjolfsson, E. & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York and London: W.W. Norton & Company.
2. Frey, C.B. & Osborne, M.A. (2013). *The future of employment: how susceptible are jobs to computerization?* Oxford: Oxford Martin School.

## **Towards a monitor for technology, skills and employment**

S. Dhondt\*<sup>a</sup> (Prof), K. Kraan<sup>a</sup> (Mr), P. Preenen<sup>a</sup> (Dr)

<sup>a</sup> TNO, Leiden, NETHERLANDS

\* steven.dhondt@tno.nl

Research on the impact of new technological transformations on work has mostly focused on possible job loss. Research estimated that 40-90% of jobs were lost. Yet, job loss in the manufacturing industries is the same. In the service sectors, job growth has continued to expand. In fact, employment in the US and Europe has never been higher. Still researchers maintain that we are on the eve of a major job loss scenario (Frey & Osbourne, 2017). More accurate research is needed on this topic. Moreover, research of technology consequences for quality of jobs and wellbeing at work is scarce.

To support such research a monitor including indicators for technology impact on work, jobs and wellbeing needs to be developed. In this light, the Dutch Social and Economic Council (SER) asked TNO to develop a monitor with indicators for estimations of future, short term consequences of technology on skills, quality of jobs, well-being and employment. The focus will be on the short term, because the future cannot be reliably predicted on the long term.

We use the Bloom and colleagues approach (Bloom, Garicano, Sadun, & Van Reenen, 2014) to understand the possible impacts of information and communication technology on work. Their approach suggests that information technology works different from communication technology. Information technology reduces information costs and helps to decentralize decision making and reduce division of labour. Reducing communication costs with communication technology does the reverse. Skilling opportunities and quality of work depend on the division of labour and are major determinants of wellbeing at work. This impact assessment is the motor for the monitor. The monitor sets out to understand which information and communication technologies impact the immediate future for a set of work and wellbeing indicators.

Additionally, we use the 'technology outburst' approach developed by the OECD (2015), model the short-term development path of technologies, and assess to what degree companies will take-up these technologies. With these building blocks (technology bursts, take-up rate, impact assessment model), we estimate the short term impacts of new technologies for a set of core occupations in the Netherlands. Results are presented and discussed

1. Bloom, N., Garicano, L., Sadun, R., & Van Reenen, J. (2014). The distinct effects of information technology and communication technology on firm organization. *Management Science*, 60(12), 2859-2885.
2. Frey, C.B. & Osborne, M.A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114(C), 254-280.
3. OECD (2015). *OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society*. Paris: OECD Publishing

## **Coping with industry 4.0 in a high-trust environment: digitalization and the transformation of work in Finland**

T. Alasoini\*<sup>a</sup> (Prof)

<sup>a</sup> Finnish Institute of Occupational Health, Helsinki, FINLAND

\* tuomo.alasoini@ttl.fi

The Nordic countries have drawn special attention due to distinctive features of their working life. Some researchers even speak of a particular 'Nordic working life model', characterized by 'saturated jobs' with high levels of discretion and autonomy combined with a high degree of task and working time flexibility (Boxall & Winterton, 2018). The Nordic version of the Fordist compromise has been supported by broad employee participation and close communication between employers and employees and their respective organizations and it manifests itself in international comparison as a high level of job quality (Mustosmäki, 2017). 'Wellbeing at work' is part of the 'National Working Life Development Strategy to 2020' in Finland.

The advance of digital technologies is increasingly putting a pressure on many of the principles and practices deriving from the Fordist compromise for managing and organising work and regulating work and employment relations. As innovation leaders in European-level comparisons, the Nordic countries are on the forefront of the digital transformation. This paper examines how these pressures are being percolated through institutional structures and strategies and actions of employers, employees and policy-makers in Finland. Although Finland, like the other Nordic countries, has many favourable infrastructure conditions that may help to smoothen the economic and social consequences of digital transformation for work and employment, owing to disruptive nature of the new increasingly intelligent and integrated technologies, outlining of possible future scenarios is anything but clear.

Discussion around digital transformation and Industry 4.0 and its consequences for work and employment has been quite (technologically) deterministic and largely hyped and speculative thus far (e.g. Frey & Osborne, 2017). More empirical analyses that pay attention to workplace-level realities are clearly needed. This paper tries to fill this gap for its part. By drawing on a literature review on empirical studies of the use of digital technologies in different industries in Finland and supplementary expert interviews, this paper tries to put this discussion on a more solid empirical basis. The focus of the analysis is on the consequences of and existing trends in the use of digital technologies for the quality of work and employment.

1. Boxall, P. & Winterton, J. (2018). Which conditions foster high-involvement work processes? A synthesis of the literature agenda for research. *Economic and Industrial Democracy*, 39(1), 27–47. doi: <https://doi.org/10.1177/0143831X15599584>.
2. Frey, C.B. & Osborne, M.A. (2017) The future of employment: how susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114(C), 254–280. doi: <https://doi.org/10.1016/j.techfore.2016.08.019>.
3. Mustosmäki, A. (2017). How Bright are the Nordic Lights? Job Quality Trends in Nordic Countries in a Comparative Perspective. PhD Thesis. Jyväskylä: University of Jyväskylä.

## **New digital technologies, organisational choice-making and employee wellbeing: evidence from a survey of senior management**

C. Warhurst<sup>\*a</sup> (Prof), S. Sarkar<sup>a</sup> (Dr), W. Hunt<sup>a</sup> (Dr)

<sup>a</sup> University of Warwick, Coventry, UNITED KINGDOM

\* c.warhurst@warwick.ac.uk

The current debate about AI and robotised automation centres on future job losses. More recent analyses have tempered the initial claims of massive job losses, pointing out that job reconfiguration are as likely as job destruction. This paper focuses on two issues: first, organisational choices about the introduction and implementation of the new digital technologies and, second, the impact of those technologies on employee wellbeing.

Claims about job losses need to be taken seriously; a raft of research indicates that *wellbeing from work* is significant - having a job remains important to most people for its psychological, sociological and material benefits. Even if less extensive than originally claimed, understanding employment security is therefore important in the context of the introduction of these new technologies. Also of concern is *wellbeing in work*. The wellbeing in work approach is concerned with the effect on residual employees of changes to work arising from the implementation of the new technologies in workplaces (Warhurst, Wright, & Lyonette, 2017).

The paper rejects the technological determinism that underpins much current debate about the new digital technologies. Technology does not determine outcomes. Instead, choices can and are made about technology adoption and use. This choice is exercised by powerful actors within companies, for example management and trade unions, and is often contested and negotiated (Child, 1972). Current debates about the new digital technologies are often myopic, blind to these organisational choices, who makes them and how they are made. However, these choices affect not just the quantity of jobs but also the quality of working life and employee wellbeing.

To understand the impact of the new digital technologies on jobs within organisations, what is required is research into the new digital technologies that is sensitive to this choice-making at the organisational level. This paper reports on such a research project. The survey-based project, undertaken with the Chartered Institute for Personnel and Development (the human resource professional representative body in the UK), has UK senior managers as its respondents. It examines why organisations invest in new technologies, how new technologies are introduced and implemented, how decisions are made, who makes those decisions and the outcomes of those decisions. Examining key aspects of work and employment, e.g. skills and job security, the findings reveal what wellbeing impacts on employees occur and which employees are impacted. The findings also help inform policymakers' understanding of how these technologies can affect businesses and employees.

1. Child, J. (1972). Organisational structure, environment and performance: the role of strategic choice, *Sociology*, 6(1), 1-22.
2. Warhurst, C. Wright, S. & Lyonette, C. (2017). Understanding and measuring job quality: Part 1 – Thematic Literature Review, London: CIPD.



## The effectiveness of workplace health promotion interventions to prevent chronic diseases - A systematic meta-review

K. Proper<sup>\*a</sup> (Dr), S. Van Oostrom<sup>a</sup> (Dr), J. Lindstrom<sup>b</sup> (Dr)

<sup>a</sup> National Institute for Public Health and the Environment, Bilthoven, NETHERLANDS ; <sup>b</sup> National Institute for Health and Welfare, Helsinki, FINLAND

\* karin.proper@rivm.nl

**Background and aim:** As the population is ageing, the number of workers with a chronic disease will likely increase. Given the increase in the retirement age, workers need to extend their working life. Prevention of chronic diseases is thus essential and the workplace offers an appropriate setting for this. As part of the Joint Action CHRODIS PLUS project, the aim of this study was to systematically review the available literature on workplace health promotion interventions to prevent chronic diseases.

**Methods:** A systematic meta-review was performed. A search to reviews published in English from 2009 onwards was performed in multiple electronic databases (i.e. Embase.com, PsycInfo, Cochrane Library). Reviews were included if they studied the effectiveness of health promotion interventions targeting a working population. The outcome under review had to involve one of the following chronic diseases: diabetes type 2, cardiovascular diseases, lung diseases, musculoskeletal disorders, and depression. Reviews including interventions targeting participants with identified risk factors for chronic conditions (e.g. such as elevated blood lipids, cholesterol or systolic blood pressure) were also included. Independent selection was done by two reviewers. The AMSTAR checklist was used to assess the methodological quality of the reviews included. Reviews were considered of high quality if >50% items were rated positive.

**Results:** Of the 374 reviews identified, 23 were finally included in this meta-review, of which 9 were of high quality. Based on the 3 high quality reviews, that summarized the effect of workplace health promotion programs on weight-related outcomes, there was some evidence for positive, though small effects of workplace health promotion (i.e. physical activity and/or diet) interventions on weight-related outcomes. The remaining 11 low quality reviews, overall showed some evidence for beneficial effects on weight-related outcomes. The five (low quality) reviews that summarized the effect of workplace health promotion interventions on other metabolic risk factors showed mixed findings. Two high quality reviews evaluated the effect of workplace psychological interventions on mental health, defined by depression, anxiety, or job stress, both showed a small, but positive effect on mental health. The remaining 4 low quality reviews studied a diverse set of interventions such as cognitive behavioral, physical activity, and stress management, and overall found positive, but small effects on mental health outcomes. Four high quality reviews that summarized the evidence on musculoskeletal disorders were consistent in that they all concluded limited to moderate evidence for a positive effect of the workplace interventions under review; there seemed to be some stronger evidence for resistance exercise training.

**Conclusion:** There seems to be moderate evidence for favorable effects of workplace health promotion interventions on weight-related outcomes, moderate evidence for small but positive effects of workplace psychological interventions on mental health, and limited to moderate evidence for a positive effect of workplace interventions for the prevention of musculoskeletal disorders with some stronger evidence for resistance exercise training. For the remaining metabolic risk factors, due to inconsistencies between reviews and lack of high quality reviews, a strong conclusion cannot yet be drawn.

## Workplace health promotion programs: a systematic review of differences in effectiveness between socioeconomic groups

D. Van De Ven<sup>\*a</sup> (Mr), S. Robroek<sup>a</sup> (Dr), A. Burdorf<sup>a</sup> (Prof)  
<sup>a</sup> Erasmus University Medical Center, Rotterdam, NETHERLANDS  
\* d.vandeven@erasmusmc.nl

### Background

In today's ageing society adverse habits (like smoking, alcohol use, an unhealthy diet and a lack of physical activity) pose a substantial threat to the health of workers. These unhealthy behaviors are more prevalent among workers in lower socioeconomic positions. Despite numerous studies on health promotion interventions in the workplace have shown promising results, evidence suggests that certain workplace interventions are more effective for people with higher socioeconomic backgrounds. In order to understand the notion of 'intervention-generated inequalities' more insight is needed on which types of interventions have different effects on various socioeconomic groups. Therefore, our aim is to systematically review the differences in effectiveness of health promotion interventions in the workplace.

### Methods

We conducted a two-tier search in electronic databases (including Embase, Medline Ovid and Cochrane DSR DARE) for relevant studies discussed in reviews published from 2014. Eligible reviews and studies had to meet the following inclusion criteria; 1. Analysis of effectiveness of interventions with respect to lifestyle (smoking, nutrition, alcohol, physical activity, weight/BMI), 2. Health promotion programs carried out in- or stimulated through the workplace 3. Experimental design with control group. Additionally, the individual studies had to specify differences in effectiveness of the intervention between educational or occupational groups in order to be eligible. Two researchers independently selected relevant studies.

### Results

The search in electronic databases resulted in 489 reviews. After screening on title and abstract the full articles of 69 reviews were investigated. Ultimately, 48 reviews were eligible. These 48 reviews included 364 studies in total, of which 13 studies investigated differences in effectiveness of interventions between educational or occupational groups and met the inclusion criteria. These 13 studies reported the differential effectiveness of interventions by socioeconomic group either on smoking (n=5), physical activity (n=7), nutrition (n=7), BMI/weight (n=6), and alcohol (n=1). The 13 included studies are comprised of controlled trials (n=3), randomized controlled trials (n=7), cluster-randomized controlled trials (n=2), and prospective cohort (n=1). The interventions were carried out in various industries and intervention strategies include educational/counseling, environmental and incentives. Of all the tests of differential intervention effects across educational and/or occupational groups no significant differences are found most of the times (n=28). In certain cases the intervention is shown to be more effective for people in lower socioeconomic positions (n=8), while in some cases the intervention is more effective for people in higher socio-economic positions (n=4). The interventions shown to be more effective for people in lower socioeconomic positions often consisted of some sort of health assessment and/or counseling.

### Discussion

In most cases workplace health programs are equally effective for people with different socioeconomic backgrounds, but sometimes differences are found in favor of people in lower socioeconomic positions and in a few cases in favor of people in higher socioeconomic positions. The results of this systematic review will provide a better understanding of the differential effects of workplace health promotion interventions across socioeconomic groups, which is needed to lower socio-economic health inequalities.

## **Workplace physical exercises and musculoskeletal disorders prevention : are they effective ?**

A. Aublet-Cuvelier<sup>\*a</sup> (Dr), L. Claudon<sup>b</sup> (Mr), MA. Gautier<sup>c</sup> (Dr), M. Kerlo-Brusset<sup>d</sup> (Dr)

<sup>a</sup> INRS, Vandoeuvre Cedex, FRANCE ; <sup>b</sup> INRS, Vandoeuvre, FRANCE ; <sup>c</sup> INRS, Paris, FRANCE ; <sup>d</sup> RATP, Paris, FRANCE

\* aublet@inrs.fr

Musculoskeletal disorders (MSD) prevention often challenges processes and organisation modes, which is complex for the companies. Nowadays temptation is high to concentrate prevention efforts towards an individual approach based on physical performance of the workers. Various exercises (warm-up, stretching, endurance and/or strengthening exercises) are currently offered to the enterprises in view of MSD prevention. The aim of this communication is to identify the main effects of these practices in a context of MSD prevention through a synthesis of 21 reviews.

Ten reviews concerned physical exercises in enterprises in a view of MSD prevention (two of them also focused on low back pain prevention). Eight reviews strictly focused on physical exercises practices at work to prevent only low back pain. Three reviews concerned the stretching practices at the workplace. Neither review on warm-up practices at the workplace has been identified.

There is a consistent finding that physical exercises practices at the workplace can reduce muscular pain in the neck/shoulder region for the symptomatic workers who work mainly in static postures, such as the visual display unit operators. Nevertheless, for these populations of workers and this type of disorders, the results seem to be more mixed in a goal of primary prevention. For the other joints of the upper limb, two reviews concluded to positive effects (respectively with limited and moderate evidence) on the pain reduction. For low back pain, the majority of the studies have been carried out in social and health sectors. Six reviews concluded to a positive effect on the reduction of the low back pain prevalence with a limited evidence, five concluded (with a limited or moderate evidence) to a positive effect on sick leave. Concerning the pain reduction, the results were different from a review to another (no evidence, positive effect with limited evidence, positive effect with high evidence).

At least, these different reviews also reported some information about the type of exercises (strengthening, endurance ...) to implement, the weekly duration of the practice, the time necessary to observe effects, the supervision conditions or the psychosocial context supportive to implement these practices.

In conclusion, there's a lack of evidence of the effectiveness of such measures, except for cervicgia in sedentary work and low back pain in tertiary prevention under certain conditions. There's more consensus on warming up and strengthening exercises than on stretching ones. To distinguish sedentary work situations from those with high physical demands is important in terms of analysis and practice. If such practices are set up, they have to be run as a project as a whole, involving social partners and the occupational health referents, and as a complementary action of primary prevention measures.

1. Choi SD, Woletz T - Do stretching Programs prevent work-related musculoskeletal Disorders? Journal of Safety, Health & Environmental Research. 2010; 6(3).
2. Moreira-Silva I, Teixeira PM, Santos R, Abreu S, et al. - The effects of workplace physical activity programs on musculoskeletal pain: a systematic review and meta-analysis. Workplace Health & Safety. 2016; 64(5): 210-22.
3. Steffens D, Maher CG, Pereira LS, Stevens ML et al. -. Prevention of Low Back Pain: A Systematic Review and Meta-analysis. Journal of American Medicine Association. 2016; 176(2): 199-208

## **Workplace health promotion : support of an occupational health service to logistics companies in prevention of whole body vibration risk.**

R. Codron<sup>\*a</sup> (Dr), V. Mora<sup>a</sup> (Dr), M. Chauvet<sup>a</sup> (Mr), P. Vincent<sup>a</sup> (Mr), S. Fouchy<sup>a</sup> (Mrs), J. Rayer<sup>a</sup> (Mrs)

<sup>a</sup> ACMS, Bussy-Saint-Georges, FRANCE

\* regine.codron@acms.asso.fr

A medical and technical team from the ACMS company has a particular interest in Whole Body Vibration (WBV) in logistics which may cause health effects for motorised drivers. Let's consider the different steps that allow the health occupational service to support employees and their companies through their prevention approach.

Firstly, between 2012 and 2016, data were collected from 15 logistics companies and 72 motorised trucks (39 lift pallets and 33 forklift trucks). Using tri-axial accelerometers, measurements were made from 15 to 40 minutes standardised to an eight-hour reference period.

The directive 2002/44/EC and french decree 2005-746 classify exposures according to daily action exposure : limit value 1,15 m/s<sup>2</sup> and the value triggering the prevention process 0,5 m/s<sup>2</sup>.

Results were : above 1,15 m/s<sup>2</sup> 4 measures (only standing drivers), between 0,5 and 1,15 m/s<sup>2</sup> 32 measures and below 0,5 m/s<sup>2</sup> 36 measures. Therefore, half of the measurements were above the threshold, spread evenly between forklift and standing trucks mostly during unloading or loading activities. Vertical axis was fully responsible for the risk.

Secondly, the results were explained in each company. Our recommendations focused on 4 areas : equipment, working environment, working organisation, driver behaviour and setting an action plan.

Thirdly, in 2017, we returned to those warehouses monitoring risk management WBV via anonymous self-administered questionnaires and employers questionnaires. The hundred employees questionnaires show that if employees know how to report hardware anomalies, they are not familiar with the health's consequences of WBV. The employers questionnaire report that actions are mostly carried out : replacement of obsolete equipment, preventive maintenance and speed reduction. Maintenance of floors, platforms and lighting is monitored. Work organisation and efforts to raise awareness on WBV has to be deployed.

Fourthly, the analysis was discussed with employers and employees. It led to the development of a new prevention action plan with an update of the occupational risk assessment document.

In order to meet the employer's needs in information/training of his staff, the ACMS team built a specific prevention module.

Fifthly, in 2018 this module is offered to companies. It consists of theoretical and practical parts with seat adjustment, adapted driving, taking into account of the working environment, rushed driving compared to unhurried driving objectified by live measurements and debriefing with employees and their management.

This initiative led by the health service is well accepted because not experienced by the employer as control of its action or by the employees as remind of instructions.

As shown by the results of the satisfaction questionnaires, 92% of employees state that the training meet their expectations, a better understanding of the subject, new knowledge, prevention advice.

The team, which knows the workplaces and has the expertise for a global approach to WBV in companies, contributes to the appropriation of a prevention culture by both employers and employees. This specific module allows everyone to become the key player in their own health and safety.

This wellbeing and health promotion approach is intended to be deployed in other sectors and for other occupational risks.

1. International Labour Organization. (2001). Guidelines on occupational safety and health management systems. Available at [http://www.ilo.org/safework/info/standards-and-instruments/WCMS\\_107727/lang--en/index.htm](http://www.ilo.org/safework/info/standards-and-instruments/WCMS_107727/lang--en/index.htm)

2. Institut national de recherche et de sécurité pour la prévention des accidents du travail et des maladies professionnelles. (2012). La conduite sans les secousses (Publication n°ED 1372). Available at <http://www.inrs.fr/media.html?refINRS=ED%201372>

3. De Ridder, M. (2016). Analyse des risques liés à l'exposition aux vibrations mécaniques. Prevent focus, 3, 4-6.

## **Downsizing and restructuring in the wake of the economic collapse and the impact on municipal employees in Iceland**

H. Sigursteinsdottir\*<sup>a</sup> (Dr)

<sup>a</sup> University of Akureyri, Akureyri, ICELAND

\* hjordis@unak.is

Municipalities in Iceland play a significant role in every community, both as service providers and employers, as they are legally bound to provide welfare services for all residents. As part of these welfare services, education is the primary function and account for about half of every municipality's expenditures. The municipalities employ about 14% of the workforce in Iceland. In many communities, they are the largest employer, especially in smaller and rural areas. The municipalities have been considered a secure workplace were layoffs have been the exception rather than the norm. However, due to the economic crisis of 2008, the municipalities were forced to downsize their operations. Because of the nature of their expenses and activities, it was not easy to downsize municipalities, even though the working environment was unstable. At first, the municipalities reacted with cutbacks in services and construction projects, but for some of them, this was insufficient as flexibility in operations relatively small for the municipalities compared to the private sector. However, like other operations, the municipalities could reduce their wage cost by, for example, cutting overtime, instituting hiring freezes, offering voluntary retirement, restructuring jobs, and laying off employees.

The study aims to examine the prevalence of laid off and restructuring in the wake of the economic collapse in Iceland and how it affected remaining municipal employees wellbeing at work. Two complementary approaches were used, online surveys and focus groups interviews. The survey was conducted three times among employees of 20 municipalities in Iceland, and 2365 employees answer the questionnaire three times. Seven focus groups interviews were conducted in two municipalities with 39 participants. In this presentation, I only used answers from two occupation groups—education (kindergarten teachers and primary school teachers) and care service (elder care and care for people with disabilities) employees, who responded to the survey at all three time points—in order to monitor changes for each individual. These occupational groups are particularly interesting because of prior job security and close contact with large numbers of families in the communities.

The results show that sixteen months after the Icelandic banks fell, more than 25% of participants reported that employees in their organisation had been laid off or resigned because of the economic crisis. The proportion rose to nearly 46% in 2011 and 51% in 2013. All the focus group participants agreed that downsizing on the scale mentioned above was something they thought would never happen in their field of work. The austerity policy of the local authorities has resulted in an increased strain on employees and affected their well-being at work, not only in the mediate aftermath of the economic collapse but also for a significant time after that. The results indicate that downsizing in the workforce is a short-term fix do reduce expenditures but for the long run cutting back in the workforce can have severe consequences for the health and well-being of the remaining employees.

## Well-being at work: How can an occupational health service support a company during a change of premises and organization?

S. Bahiri\*<sup>a</sup> (Mrs), R. Codron<sup>a</sup> (Dr)

<sup>a</sup> ACMS, Suresnes, FRANCE

\* sonia.bahiri@acms.asso.fr

A company has requested the Occupational Healthcare Service to be involved in the project of moving its headquarters. We will develop how our help during the process has pushed the company to make progress on the matter of working conditions, building layout and internal organization, and served as a basis for further discussion on overall quality of life at work. The factors that contributed to this are presented hereafter.

### How did we proceed?

Interviews with management, the hygiene safety and working conditions committee (CHSCT) and members of the occupational healthcare service - occupational physician, ergonomist, environment hygiene and safety technician, occupational healthcare assistant - allowed to answer the following questions:

- Choice of the site, to ease employee mobility
- Configuration of the company departments to create synergies
- Development of collaborative work
- How to take into account other internal activities: reprography, mail, reception, catering...

This reflection allowed the project to evolve and integrate a new dimension to the building specifications, which was originally more focused on the technical aspects than on employee well-being.

### What were the highlights of the project?

- We implemented a collaborative approach: Human Resources (HR) study groups and managers expressed a need for better synergy and communication between the teams. Once a macro-zoning plan favourable for more communication was set, each manager was able to decide with his team the micro-zoning.
- Employees were informed of the progress during the whole project thanks to: the installation of a miniature model of the building at the reception, a slideshow of the evolution of the construction site, the invitation to the laying of the building's first stone, site visits...
- Upstream preparation to the upcoming organizational changes: removal of the interior partition to create collaborative spaces, training the managers to project management and visual management, reflection on working time (work from home).

This initiative started in the company's ancient premises and allowed employees to view this move positively, and relish the opportunity to settle in premises more adapted to their professional activity.

Once the move was completed in March 2018, the occupational healthcare service collected employee feedback during medical visits, CHSCT meetings and discussion with HR services. Adjustments to the installations were made when necessary, thanks to visits to the new premises and observations within the new workplace, with particular interest set on the workstations that had previously required adjustment. This work was conducted in association with general services.

This project was made possible thanks to the trust that had been built over the years with this company. Our neutral ground and our expertise on the subject in addition to our knowledge of the company contributed heavily the success of our action.

The Occupational Healthcare Service contributes to regional occupational healthcare policy by developing primary prevention and promoting quality of life at work. We can capitalize on this experience to develop this approach to other small and medium sized businesses, which represent 80% of our members.

1. Desarmenien, A. ; Jean Viala, L. ; Josserand, M. ; Le Bail, C. ; Rasclé, V. (2016). D'une discipline à un métier : construction du métier d'ergonome en Service de Santé au Travail dans un collectif pluridisciplinaire. Communication présentée au 51ème congrès de la SELF, Marseille

2. Martin C. L'ergonome dans les projets architecturaux. Dans P. Falzon (Ed.), Ergonomie (pp. 421-435). Paris : PUF.



## The contribution of work and lifestyle factors to socioeconomic inequalities in self-rated health -- a systematic review

A. Dieker<sup>a</sup> (Ms), W. Ijzelenberg<sup>b</sup> (Dr), K. Proper<sup>c</sup> (Dr), A. Burdorf<sup>d</sup> (Prof), A. Van Der Beek<sup>a</sup> (Prof), G. Hulsegge<sup>\*a</sup> (Dr)

<sup>a</sup> Amsterdam UMC, Amsterdam, NETHERLANDS ; <sup>b</sup> VU University, Amsterdam, NETHERLANDS ;

<sup>c</sup> Dutch National Institute for Public Health and the Environment, Bilthoven, NETHERLANDS ;

<sup>d</sup> Erasmus University Medical Center, Rotterdam, NETHERLANDS

\* g.hulsegge@vumc.nl

**Objective:** This study aimed to systematically review the literature on the contribution of work and lifestyle factors to socioeconomic inequalities in self-rated health among workers.

**Methods:** A search for cross-sectional and longitudinal studies assessing the contribution of work and/or lifestyle factors to socioeconomic inequalities in self-rated health among workers was performed in PubMed, PsycInfo and Web of Science, in March 2017. Eligibility and risk of bias assessment were performed by two independent reviewers. The median change in odds ratio between models without and with adjustment for work or lifestyle factors across studies was calculated to quantify the contribution of work and lifestyle factors to health inequalities. A best-evidence synthesis was performed.

**Results:** Three high-quality longitudinal and 17 cross-sectional studies consistently reported work factors to explain part (about one-third) of the socioeconomic health inequalities among workers (grade: strong evidence). Most studies separately investigated physical and psychosocial work factors. Two longitudinal studies reported no separate contribution of physical workload and physical work environment to health inequalities, which was in contrast with the 12 -sectional studies. Regarding psychosocial work factors, lack of job resources (e.g. less autonomy) seemed to contribute to health inequalities, whereas job demands (e.g. job overload) might not. Furthermore, two longitudinal and four cross-sectional studies showed that lifestyle factors explain part (about one-fifth) of the health inequalities (grade: strong evidence).

**Conclusions:** The large contribution of work factors to socioeconomic health inequalities emphasizes the need for future longitudinal studies to assess which specific work factors contribute to health inequalities.



## Work-life merge and wellbeing in Australian and UK academics

C. Fetherston<sup>\*a</sup> (Prof), R. Wei<sup>a</sup> (Dr), S. Batt<sup>a</sup> (Ms), M. Sully<sup>a</sup> (Dr), A. Fetherston<sup>a</sup> (Dr)

<sup>a</sup> Murdoch University, Perth, AUSTRALIA

\* C.Fetherston@murdoch.edu.au

### Background

The increasing flexibility being experienced in some work places is resulting in the phenomenon of work-life merge, a term first coined to “capture the idea that work and free time are no longer neatly compartmentalized but seamlessly jumbled together”. (Manhire, 2013)

### Aim

The Work-life Merge and Wellbeing in Academics (WLMaWiA) study aimed to describe how Australian and UK academics experience work-life merge, its impact on their wellbeing and what conditions academics view as necessary and desirable to meet their needs in the maintenance of their wellbeing.

### Method

A mixed method survey was completed by a sample of 605 academics from Australian Universities. Mental wellbeing was measured using the short version Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) (Warwick Medical School, 2018) and a standard multiple regression analysis was performed to estimate the proportion of variance in mental health wellbeing that can be accounted for by factors related to demographics, work characteristics, work orientation, work-life merge, physical wellbeing and exercise. UK data collection is ongoing and findings will be finalised for presentation alongside the Australian data.

### Findings

The SWEMWB Score for Australian academics was 21.35, and fell between the bottom 61 to 80% of English population norms, which were 23.7 for men and 23.6 for women (Fat, Scholes, Boniface, Mindell & Stewart-Brown, 2017). Whilst English norms were not significantly different by gender ( $p=.100$ )<sup>3</sup>, Australian male academics' scores (20.7) were significantly lower than females (21.7,  $p<.007$ ), but no significant difference was found related to age ( $p=.667$ ) or level of employment ( $p=.477$ ). 71.4% of respondents reported they had worked a mean of  $18 \pm 15$  hours/week in excess of their contract in the previous 2 weeks and 88% estimated a mean excess of  $12.2 \pm 20.1$  hours/week in the last 6 months. Various experiences in the way work merged with personal life activities were described, and reported as adversely affecting psychological health either sometimes, often or always by 78.7% of participants, whilst 72% similarly reported it affected their physical health. Regression analysis identified six factors accounted for a significant 42.2% of the variability in mental well being,  $R^2=.422$ , adjusted  $R^2=.400$ ,  $F(19,502)=19.3$ ,  $p<.001$ . The model showed a large effect size ( $f^2=.73$ ) and factors explaining mental wellbeing were the number of hours of academic work completed in excess of contracted hours in the last two weeks, characteristics in common with 'job' and 'calling' work orientations, experiencing intrusive personal thoughts during work hours, and work related thoughts outside of work. The highest contributing factor was the amount wellbeing was perceived to suffer because work activities merged into family or other life activities ( $t(502)=-4.761$ ,  $p<.001$ ).

### Conclusion

The overlap between work and other life activities, work in excess of contracted hours, and employee characteristics in common with a job work orientation, alongside intrusive personal and work related thoughts, significantly and negatively impact mental wellbeing in Australian academics. Urgent action is required by the university sector to implement strategies to support academics and address these issues.

1. Manhire, T. ( 2013, Jan 17). Forget the balance, this is the merge. NOTED. Retrieved from <https://www.noted.co.nz/archive/listener-nz-2013/forget-the-balance-this-is-the-merge/>

2. Fat, L.N., Scholes, S., Boniface, S., Mindell, J., & Stewart-Brown, S. (2017). Evaluating and establishing norms for mental wellbeing using the Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): findings from the Health Survey for England. *Qual Life Res.* 26, 1129-114.

3. Warwick Medical School (2018). Development of WEMWBS. Retrieved from <https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/development/>

## **Protocol for evaluating a workplace intervention within the framework of consultations for Suffering at Work in French-speaking Switzerland**

Z. Mediouni\*<sup>a</sup> (Dr), C. Barlet-Ghaleb<sup>a</sup> (Dr), M. Zenoni<sup>a</sup> (Ms), M. Rinaldo<sup>a</sup> (Dr), D. Grolimund Berset<sup>a</sup> (Dr), S. Eich<sup>a</sup> (Dr), B. Danuser<sup>a</sup> (Prof), P. Krief<sup>a</sup> (Dr)

<sup>a</sup> Institut universitaire romand de Santé au Travail, Epalinges, SWITZERLAND

\* Zakia.Mediouni@chuv.ch

**Introduction:** Psychosocial suffering involves diverse human, social and economic costs. Some 34.4% of workers in Switzerland report chronic stress related to their jobs. Medical consultations for suffering at work aim to maintain—or renew—patients' abilities to make decisions and act following a diagnosis of psychological suffering related to their work; they also aim to help workers return to their workstations or remain there. Workplace interventions by consulting occupational physicians can go beyond the subjective issues: they can be offered to employees, in anticipation of a return to work when this appears feasible from the outset.

**Objective:** To qualitatively evaluate perceptions of workplace interventions and identify their effects by collecting the verbatim statements of employees and their employers.

**Materials and methods:** Qualitative single-centre study of workplace interventions conducted by the Consultation Service for Suffering at Work's occupational physicians for patients seen between January 2015 to December 2017. Nineteen workplace interventions took place, out of 184 different consultations. The verbatim statements of employees and their employers will be collected over a variable timeframe, using semi-structured face-to-face interviews, once all the interventions have been completed. These will then be recorded, transcribed and analysed.

**Conclusion:** This exploratory research project will provide a better understanding of the issues surrounding work-related psychological suffering and of which strategies support patients most effectively.

**Keywords:** Research protocol, Workplace intervention, Occupational health, Consultation evaluation, Mental health

1. Gollac M, Bodier M. Mesurer les facteurs psychosociaux de risque au travail pour les maîtriser. Collège d'expertise sur le suivi des risques psychosociaux au travail, faisant suite à la demande du Ministre du travail, de l'emploi et de la santé ; 2011.
2. Dejours C, Molinier P. Le travail comme énigme. *Sociol Trav.* 1994 ; 36 : 35?44.
3. Andreani T, Berrut S, Gazareth P, Hauri D, Kaeser M, Lieberherr R, et al. Statistiques de la santé 2014. Neuchâtel (Suisse) : Office fédéral de la statistique (OFS) ; 2014 p. 96.

## Interventions improving mental health of nursing students and novice nurses to prevent drop-out: a systematic review

E. Bakker\*<sup>a</sup> (Ms), J. Kox<sup>a</sup> (Mr), C. Boot<sup>b</sup> (Dr), A. Francke<sup>c</sup> (Prof), A. Van Der Beek<sup>b</sup> (Prof), P. Roelofs<sup>d</sup> (Dr)

<sup>a</sup> Research Centre of Care Innovations, Rotterdam University of Applied Sciences, Rotterdam, NETHERLANDS ; <sup>b</sup> Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Public and Occupational Health, Amsterdam Public Health research institute, Amsterdam, NETHERLANDS ; <sup>c</sup> Nivel, Netherlands Institute for Health Services Research, Utrecht, NETHERLANDS ; <sup>d</sup> University Medical Center Groningen, Department of Health Sciences, Community and Occupational medicine, Groningen, NETHERLANDS

\* e.j.m.bakker@hr.nl

**Background:** Currently, nursing staff shortages are growing in Western countries (1), while drop-out among student and novice nurses is high. Mental health problems are a potential cause of drop-out, and occur frequently. Several studies report high prevalences of depression, anxiety and distress (2). In order to prevent attrition due to reduced mental health, it seems important to teach students to take the lead in their own work-related health (3). However, an overview of interventions is lacking. This review aimed to provide a systematic overview of interventions aiming at improving mental health in order to prevent drop-out from nursing education/work and an overview of the effectiveness of these interventions.

**Methods:** Up to 2018 various relevant scientific databases were searched. Two researchers identified studies. Interventions aiming at improving mental health with a quantitative research design were eligible for inclusion. Methodological quality was appraised.

**Results:** From 7,378 records, 19 studies were included. Only one was an RCT; other studies used a repeated measure, a quasi-experimental or a mixed methods design. The content of interventions varied from multi-component approaches, such as stress management programs, to single-component interventions, such as relaxation interventions. Most of the interventions for student nurses focused primarily on improving mental health. The majority of interventions for novice nurses were multicomponent retention programs that included limited interventions for mental health improvement. Since only five studies showed a significant effect on attrition/retention/sick leave, and an overall high risk of bias, there is limited evidence that these programs are effective. Heterogeneity prohibited pooling of data.

**Conclusion:** A broad range of interventions aiming at improving mental health in order to prevent drop-out from nursing education/work are available, but the evidence for the effectiveness of these interventions is limited. There is a need for high-quality studies and it is recommended to align methods and measures used in this field.

**Keywords:** drop-out; retention; mental health problems; stress management; student nurse; novice nurse; systematic review.

1. European Agency for Safety and Health at Work (2014). Current and emerging issues in the healthcare sector, including home and community care. European Risk Observatory Report.
2. Pulido-Martos, M., Augusto-Landa, J.M. & Lopez-Zafra, E. (2012) Sources of stress in nursing students: a systematic review of quantitative studies. *International Nursing Review* 59, 15–25.
3. Galbraith, N.D. & K.E. Brown, K.E. (2011) Assessing intervention effectiveness for reducing stress in student nurses: a quantitative systematic review. *Journal of Advanced Nursing* 67(4), 709–721.

## **Comprehensive Health Promotion Interventions: evidence from Estonia.**

K. Kuimet\*<sup>a</sup> (Mrs), M. Järvisa (Dr), J. Korotõtsb (Ms)  
a Tallinn University of Technology, Tallinn, ESTONIA ; b Estonian Business School, Tallinn, ESTONIA  
\* karin.kuimet@eek.ee

In addition to job placement and remuneration, employers are increasingly focusing on improving the quality of working life. The health of employees is affected both by exposure to occupational hazards and other organizational aspects within the organization. Occupational health and safety management and its effectiveness depend on the willingness of the employer and employees to work together to ensure a safe and healthy working environment. The integrating workplace health promotion (WHP) into the workplace occupational health and safety (OSH) policy has been advocated. The purpose of the study was to (1) explore types of WHP activities available in Estonian organisations, (2) analyze the relationship between management activities and the working environment and health promotion, (3) enhance understanding on the role of organisations' values in order to develop sustainable working life and to ensure employees' well-being.

### Methods

The substantive parts of the paper present recent comparative survey evidence. The study assesses management approaches related to WHP, senior managers and employees' perceptions of the WHP and organizational culture in Estonian organizations. The statistical survey results were complemented by data acquired from a national Work Environment questionnaire survey, carried out by Statistics Estonia in 2009 and 2015, which are a representative surveys utilising employer-employee-linked data, designed specifically for studying working environment and measuring safety attitudes, perceptions, risk awareness, values, perceived responsibility for and involvements in safety issues. This is a long-term study, and this article focuses on studies conducted during the different phases of the economic cycle.

A qualitative approach includes eight case studies (organizations, with the best practices of WHP and ergonomic interventions), semi-structured interviews with senior managers and focuses group interviews with employees with the aim to identify types of interventions and their outcomes.

### Results:

The data reveal key issues in WHP management and an organizational culture in Estonian organizations. It turns out from the study that 72-80% of respondents consider that a safe and healthy working environment should be shared with employees and employers. However, it can be argued that in practice there is often insufficient support for decision and responsibility.

A statistical analysis of questionnaires shows many organizations with an outstanding organizational culture, implemented programmes of promoting health among employees and positive employers' perception towards WHP. However, the study demonstrates that there is often a lack of a systematic approach and linking management activities with health promotion. Qualitative data indicate the important role of shared values and understandings as well as management positive perceptions towards WHP.

### Conclusions:

This paper contributes to the development of better understanding of the concept of social capital and its role in exploring social determinants of employees' health, WHP strategy, policy, and intervention as well as the relationship between human resource management (HMR) and organization (safety) culture. The article suggests that the WHP strategies and programs need to be integrated into organizational health and safety policy and occupational safety management system in the organizations. In addition, employees' health and healthy behavior must be recognized, acknowledged and be managed within the organization.

1. Sherriff, B., Norton, R. 2011. Promoting effective health and safety leadership: using the platform in the model Work Health and Safety Act. Safe Work Australia.
2. Kusumastuti, D. (2011). Aligning Human Resources and Business Strategy. *Aligning Human Resources and Business Strategy*, (2001), 163–193. <http://doi.org/10.1016/B978-0-7506-8017-2.00006-1>
3. Conchie, S.M. (2013). Transformational leadership, intrinsic motivation, and trust: A moderated-mediated model of workplace safety. *Journal of Occupational Health Psychology*. <http://doi.org/10.1037/a0031805>

## **Combating bullying at work in the Netherlands: design and first results from a longitudinal evaluation of an organizational intervention**

R. Schelvis\*<sup>a</sup> (Dr), L. Van Dam<sup>a</sup> (Ms), M. Bakhuys Roozeboom<sup>a</sup> (Mrs), L. Van Der Zwaan<sup>a</sup> (Mr), S. Van Den Bossche<sup>a</sup> (Mr)

<sup>a</sup> TNO, Leiden, NETHERLANDS

\* roos.schelvis@tno.nl

Bullying in the workplace exists and is a reality for almost 500.000 Dutch workers. Most research into bullying has focused on describing its antecedents and consequences. However, intervention research is limited and robust findings are lacking. This abstract describes the design of an organizational intervention to combat bullying and the first results from the process and effect evaluation.

### **Design of the project**

This study is funded by the Ministry of Social Affairs and Employment (SZW) and the Inspectorate SZW in the Netherlands. The aim is to develop an intervention that inspectors can advise to employers if risk factors for bullying are detected. The intervention might even be enforced on these employers, but then it needs to 1) reflect the state of the art according to scientists and professional service providers in the OSH-field, and 2) be tested scientifically. Therefore, important design criteria for them were: collaborating with scientists and OSH-service providers and a rigorous research design to gather scientific evidence. The following descriptions of intervention and evaluation were accorded by the participating scientists and OSH-service providers.

### **Design of the intervention**

Drawing on good practice and three effective interventions in related fields or on related outcomes, active ingredients of a bullying intervention were identified, i.e.: the intervention needs to be participative, multi-level (i.e. employee/team, line manager, director), cyclical and supported by internal and external experts. It needs to consist of a series of process steps (prepare > measure > act > measure). The 'act'-step addresses awareness of undesirable behaviors, such as bullying, and needs to change group norms at all levels, by means of a dialogue method. Sixteen experienced OSH-service providers were trained in applying the intervention in organizations.

### **Design of the evaluation**

Ten organizations were recruited to participate in the intervention study. Organizations were included if (a.o.) risk factors for bullying were present and excluded if a reorganization was planned during the intervention period. In every organization four teams of 20 workers and their line managers were randomly allocated to the intervention or waitlist group. In order to be able to adapt the intervention according to lessons learned, a stepped inflow was applied: every six weeks two organizations started the intervention.

A longitudinal effect evaluation with four measurement moments during nine months was designed, aiming to determine a decrease in bullying and its antecedents, but also an increase in positive work behaviors (e.g. prosocial behavior).

Also, a mixed methods process evaluation was designed according to the Randall and Nielsen framework for process evaluation, it describes the success of the implementation (e.g. reach), enabling and hindering contextual factors, and the role of mental models of relevant stakeholders.

### **Conclusion**

Designing an anti-bullying intervention for the workplace that reflects the state of the art and is supported by scientists and OSH-providers is possible, as well as designing a fairly rigorous evaluation. If the anticipated results are in line with hypotheses, the intervention can be used by the Inspectorate and this would institutionalize the approach to bullying at work in the Netherlands.

## Technostress: Where are we now and where do we go from here?

L. Van Dam<sup>\*a</sup> (Ms), L. Van Der Zwaan<sup>a</sup> (Mr), M. Van Egmond<sup>a</sup> (Mrs), J. Van Den Eerenbeemt<sup>a</sup> (Mr), I. Niks<sup>a</sup> (Ms), L. Hermans<sup>a</sup> (Ms)

<sup>a</sup> TNO, Leiden, NETHERLANDS

\* liza.vandam@tno.nl

### Introduction

Researchers have been focusing on a new concept in the realm of work-related stress: technology-induced stress, or “technostress”. As the term suggests, it includes all forms of stress that result from working with technology. Technostress is an obvious challenger of wellbeing in the workplace and -given its novelty- it is a concept worth debating over. Therefore, we apply for a workbench session to engage the audience in a technostress simulation and consecutive discussion.

The literature currently offers a categorical perspective on the concept of technostress, describing five pathways on how working with technology can induce stress in working individuals (Tarafdar et al., 2007). These describe stress as a result of:

1. Information overload, the ability to work faster, and having a higher workload (techno-overload)
2. Being available and connected at all times and a diminished work-life balance (techno-invasion)
3. Not being able to understand new technology (techno-complexity)
4. A fear of losing your job or being replaced, even by co-workers with more knowledge about technology (techno-insecurity)
5. Constant changes in technology, software, and hardware (techno-uncertainty).

In addition, a recent study by TNO revealed that there are other concepts, related to technology, that can cause stress at work, such as constant distractions, fear of missing out, and being confronted with other people’s (seemingly) perfect lives on social media.

This begs the following questions: How do we define technostress? Do all of these described themes relate to the concept of technostress? And, more importantly, is it justified to lump all studies under the overarching name of ‘technostress’-studies, or do we need to distinguish studies based on underlying themes and terms (e.g. techno-overload or techno-complexity) when we study technology-related/induced stress?

These are questions that, to our knowledge, have not been addressed in the literature at this moment. Yet, they are very important, especially in creating a solid base for future studies, as well as intervention development, from a workplace health promotion perspective.

### Workbench-session

We propose to hold a workbench-session in which we wish to answer the questions that are posed in this abstract. In addition, we wish to define a direction for future research on technostress, where to go from here. Specifically, are there any practical solutions that we can study and apply in organizations?

To answer these questions, we intend to organize a workbench session. Firstly, to address the questions on the definition of technostress, we wish to include the audience and make them experience certain aspects of technostress. By doing so, we want to create an atmosphere in which the audience wants to participate in answering these questions with us. In addition, we hope to create more awareness in our audience when it comes to experiencing technostress.

Secondly, we want to invite several experts on this subjects to discuss the scientific side of technostress. We want to discuss the literature as well as the practical implications. This is also the part where we want to ideally discuss the future of technostress-studies.

1. Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, 24(1), 301-328.



## **Client-related Burnout measured with the Copenhagen Burnout Inventory and self-reported exhaustion. Construct and criterion validity among Swedish Home-Care Personnel.**

A. Lundin<sup>\*a</sup> (Dr), I. Målvist<sup>b</sup> (Mrs), M. Forsman<sup>a</sup> (Prof)

<sup>a</sup> Karolinska Institutet, Stockholm, SWEDEN ; <sup>b</sup> Center for Occupational and Environmental Medicine, Stockholm, SWEDEN

\* andreas.lundin@ki.se

### **Background**

Burnout syndrome is a theoretical construct of fatigue and emotional exhaustion caused by work. In Sweden a large proportion long-term sick during the last decades has been diagnosed with ICD diagnoses such as work related stress exhaustion, work-related neurasthenia or the non-medical 'problems related to life management difficulties' resulting in a tentative ICD diagnostic criteria for Exhaustion. The Copenhagen Burnout Inventory (CBI) was designed to measure Exhaustion, and consist of three separate scales with the purpose of assessing exhaustion at three levels of specificity; without attribution to work, exhaustion attributed to work in general, and one scale intended only for use in human service sector workers (true to the original formulation of fatigue attributed to working with 'clients' or 'patients'). With only six questions the CBI is considerably shorter than commonly used screening tools for burnout or exhaustion. In this study we examine the construct and criterion validity of the Copenhagen Burnout Inventory Client subscale.

### **Method**

Employees at selected Swedish Home-Care Services (n = 469) participated in a questionnaire on work environment and mental and physical health. The CBI Client subscale was translated from Danish and adapted to the Home-Care setting. Symptoms for the tentative diagnostic criteria for Exhaustion was covered using the Self-rated Exhaustion Disorder scale. Questions covering psychological demands, work control and social support used were modified questions from the QPSNordic questionnaire.

Construct validity of the CBI was assessed using a Two-parameter logistic Item Response Theory after establishing sufficient unidimensionality with Oblique factor analysis. Agreement between CBI scale score and Self-rated Exhaustion Disorder (criterion validity) was examine through Receiver Operating Characteristic curve analysis. Agreement between CBI scale scores and psychological demands, work control and social support were tested using Spearman correlation.

### **Results**

A majority of the workers were women (85%), married or cohabiting (58%) and had children (51%). While a majority were born in Sweden (64%) a large proportion were Extra-Europe immigrants (31%). Mean age of the sample was 45 years (SD = 13.4, range 18-69). The CBI scale was symmetrical (n = 466, mean 13.6 (SD 4.7, skewness 0.2 kurtosis -0.04)) and 56 workers (12%) fulfilled the Exhaustion criteria. CBI was not correlated to age (r = -0.08, p = 0.10) but extra-European workers were different from (m = 15.3) Swedish born (m = 12.8, t(461) = -5.5, p = .0001).

Eigenvalues/scree plot examination suggested that the CBI items belong to a single dominant factor (first three eigenvalues 2.7, 0.17, 0.08). Item response theory coefficients showed that all CBI items had good discriminatory abilities (slopes: 1.6, 2.8, 1.9, 1.5, 2.3, and 3.6). All thresholds were logically ordered but some response alternatives were close.

The Area under the Receiver Operating Characteristic curve between CBI scale scores and Exhaustion was acceptable (0.74). Spearman correlation coefficients between CBI and psychological demands, work control and social support were low to moderate, significant and in the expected direction.

### **Conclusion**

In this sample of home care personnel the CBI displayed construct and criterion validity.



## Policy and practice initiatives to improve ambulance staff mental health and wellbeing in the United Kingdom: a national picture in a global context

K. Sanderson\*<sup>a</sup> (Prof), L. Clark<sup>a</sup> (Dr), R. Fida<sup>a</sup> (Dr), J. Williams<sup>b</sup> (Prof), N. Rees<sup>c</sup> (Mr), J. Murdoch<sup>a</sup> (Dr), J. Skinner<sup>a</sup> (Dr), T. Foster<sup>d</sup> (Mrs)

<sup>a</sup> University of East Anglia, Norwich, UNITED KINGDOM ; <sup>b</sup> University of Hertfordshire and South East Coast Ambulance Service NHS Foundation Trust, Hatfield, UNITED KINGDOM ; <sup>c</sup> Welsh Ambulance Service NHS Trust, Denbighshire, UNITED KINGDOM ; <sup>d</sup> East of England Ambulance Service NHS Trust, Melbourn, UNITED KINGDOM

\* kristy.sanderson@uea.ac.uk

**Background:** Ambulance sector staff are at elevated risk of a range of poor health and wellbeing outcomes including depression, post-traumatic stress disorder, suicide, poor sleep quality, and worse physical health. This paper presents three studies to explore the national policy and practice initiatives underway in the United Kingdom (UK) to address these health inequalities, in the context of a new global initiative to embed a proactive approach to health and wellbeing of staff in ambulance services.

**Aims:** (i) to explore the quality of the work experience amongst National Health Service (NHS) ambulance sector staff, and the organisational commitment to staff wellbeing; (ii) to produce a systematic evidence map of published and grey literature on ambulance staff health and wellbeing to understand the quality of the evidence base for improving health and wellbeing in this sector; and (iii) to explore the policy and organisational supports currently in place for staff wellbeing across the ambulance sector in the UK.

**Methods:** (i) Data were obtained from the most recent NHS Staff Survey for the 10 ambulance services in England (2017, N >15,000). Cross-sectional analyses by occupation investigated: work environment (e.g. demands and rewards; role clarity; violence, bullying and harassment); wellbeing (job good for health; unwell due to work-related stress; presenteeism, musculoskeletal health); engagement; and perceived organisational commitment to staff wellbeing. Given the large sample size, effect sizes were considered of greater interest than statistical significance. (ii) Systematic review methods were used to map the evidence base in the UK over the past 20 years for health and wellbeing interventions (PROSPERO 2018 CRD42018104659). (iii) A national content review of policies and procedures related to health and wellbeing was conducted for ambulance services to rate the extent to which an integrated approach to workplace mental health has been implemented.

**Results:** Fifty-eight percent of paramedics and 50% of general managers reported feeling sick due to stress in the past 3 months, and 68% of operational staff reported sickness presenteeism. Ambulance technicians had the poorest musculoskeletal health. A poor work environment, especially lower support from managers and experiencing violence, bullying or harassment, accompanied poorer wellbeing and engagement. The evidence map showed that most peer-reviewed literature is descriptive in nature with no intervention studies located. Interventions related to individual resilience have been reported in the grey literature but there have been no intervention studies of organisational change or management practices. Policy and practice supports for staff wellbeing are rapidly evolving following a national roll-out of a policy toolkit to support wellbeing and suicide prevention amongst staff by the Association for Ambulance Chief Executives.

**Conclusions:** More than 40,000 people work in the ambulance sector in the UK. There is a high need for a quality and proactive organisational response to staff wellbeing in the ambulance sector, but a poor evidence base from which to implement solutions. Managers themselves as well as front-line staff are in need of improved support. A new international network has been established to share best practice.

1. Clark L, Fida R, Skinner J, Murdoch J, Rees N, Williams J, Foster T, Sanderson K. The health, well-being and support interventions for UK ambulance service personnel: a systematic evidence map 1998-2018 . PROSPERO 2018 CRD42018104659 Available from: [http://www.crd.york.ac.uk/PROSPERO/display\\_record.php?ID=CRD42018104659](http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42018104659)

## Returning to work and staying at work after sickness absence due to common mental disorders: results from a mixed-methods follow-up study in Germany

A. Sikora\*<sup>a</sup> (Mrs), G. Schneider<sup>a</sup> (Mr)

<sup>a</sup> Federal Institute for Occupational Safety and Health, Germany, Berlin, GERMANY

\* Sikora.Alexandra@buaa.bund.de

### Objectives

Staying at work after returning to work (RTW) from sickness absence(s) due to common mental disorders is a very important issue in respect of the employees' overall wellbeing and their wellbeing at work [1]. Given the fact that in Germany evidence is still lacking in terms of personal, disease-related and work-related factors regarding RTW and staying at work, one aim of this study is to investigate the sustainability of the RTW process with its different phases and influencing individual and external factors.

### Methods

The prospective cohort study with a quantitative and a qualitative part was conducted in two psychosomatic rehabilitation facilities and two psychiatric clinics. It consists of patients between 18 and 60 years of age, part- or full-time workers with a diagnosed common mental disorder, who will be followed-up for 18 months after clinical treatment. The participants will be questioned via telephone at four points in time (at the end of the clinical treatment (t0), after six months (t1), 12 months (t2) and 18 months (t3)). The baseline computer-assisted telephone interviews (CATI) were realised between August 2016 and October 2017. Therefore, the survey period will not be completed until April 2019. Besides, there were qualitative interviews with 32 out of 289 participants at three points in time (t0, t1 and t2), which will be merged with the quantitative data at the end of the study. The quantitative data will be analysed using multivariate models, e.g. survival analyses and other regression models. Outcome measures are the duration until RTW, the time to full RTW as well as the sustainability of RTW (e.g. sickness absences, subjective functioning).

### Results

The baseline study sample consists of N = 289 individuals, who met the inclusion criteria. Their mean age was 48 years (SD = 8.6), 47 % were female, 71 % lived in a partnership, and 30 % had a degree from university or university of applied sciences. Preliminary results show that after six months, 272 of initially 289 participants (94 %) could be reached. Further findings after six months show that 243 participants (89 %) returned to their workplace. The latest overall dropout rate is 8 %, and at the end of August 2018, N = 176 (61 %) already completed all four telephone interviews. Results of the analyses regarding prognostic factors for staying at work and the sustainability of the RTW process will become available in spring 2019 and will be presented at the conference.

### Conclusion

Findings of this study will help to gain a better understanding of the complex RTW process, regarding personal, disease-related and work-related factors that predict a successful and sustainable RTW among employees with sickness absence(s) due to common mental disorders.

1. [1] Nielsen, K., Yarker, K., Munir, F. & Bültmann, U. (2018). IGLOO: An integrated framework for sustainable return to work in workers with common mental disorders, *Work & Stress*, DOI: 10.1080/02678373.2018.1438536.

## Occupational health of personal home-care aides

M. Sellapin<sup>\*a</sup> (Mr), V. Dodeler<sup>b</sup> (Dr), E. Michinov<sup>b</sup> (Prof)

<sup>a</sup> Fédération ADMR Ille-et-Vilaine ; Univ Rennes, LP3C (Laboratoire de Psychologie : Cognition, Comportement, Communication) - EA 1285, F-35000 Rennes, France, Rennes, FRANCE ; <sup>b</sup> Univ Rennes, LP3C (Laboratoire de Psychologie : Cognition, Comportement, Communication) - EA 1285, F-35000 Rennes, France, Rennes, FRANCE

\* marc.sellapin@etudiant.univ-rennes2.fr

### Context

Considering the ageing population, personal home-care aides are and will be playing a fundamental role in the years to come (Ministère des solidarités et de la santé, 2018). However, this sector is currently facing a great deal of impediments, of two kinds: a dire need for applicants and serious occupational health issues (Assurance maladie, 2016). Protecting these workers is a public health matter, as more than a million professionals are involved (Direction de l'animation de la recherche, des études et des statistiques, 2018). Furthermore, the growing need for home caring also makes it a societal concern.

### Study objectives

Within the framework of a CIFRE thesis project, we will study occupational health among personal home-care aides from 12 associations within the ADMR Ille-et-Vilaine network over a period of 18 months.

Six of these associations are guided through the implementation of a participatory intervention to improve working conditions. On the contrary, the other 6 keep on operating as usual. Every 6 months, the professionals within these 2 groups will receive a questionnaire dealing with diverse aspects of occupational health.

This study aims to ascertain if the participatory intervention based on discussion areas, has indeed a positive influence on workplace health.

Our intention here is to discuss the results of the first wave of questionnaires.

### Method

The project was explained to the workers of the 12 associations, who then completed the first questionnaire (N=408).

This questionnaire measures workplace health antecedents (psychosocial strain factors, collaboration, perceived recognition, proactivity) as well as certain negative and positive dimensions of occupational health (well-being at work and burnout).

### Results

Firstly, we propose broaching the results under a descriptive angle, with a characterization of the sample and the main tendencies of the various scales, collaboration scale ranging from 1 to 7 (N=407, M=4.06, SD=.95), proactivity ranging from 1 to 5 (N=406, M=3.15, SD=.63), perceived recognition at work ranging from 0 to 10 (N=405, M=6.67, SD=1.65), job demands ranging from 9 to 36 (N=345, M=22.70, SD=4.40), decision latitude ranging from 24 to 96 (N=358, M=70.29, SD=7.99), well-being at work ranging from 0 to 5 (N=408, M=3.88, SD=.68) and burnout ranging from 1 to 7 (N=408, M=2.82, SD=1.00).

Then, in a more exploratory perspective, we will present the relationships appearing between these variables with multiple linear regressions. On one hand, perceived recognition at work is positively linked to well-being at work ( $\beta=.54$ ,  $p < .0001$ ) as well as decision latitude ( $\beta=.25$ ,  $p < .0001$ ). On the other hand, perceived recognition is negatively connected to burnout ( $\beta=-.34$ ,  $p < .0001$ ), whereas job demands are positively linked to the latter ( $\beta=.29$ ,  $p < .0001$ ).

### Discussion

The results of this first cohort will be discussed in relation to the actual scientific literature on occupational health determinants. We will also continue to carry out the participatory intervention, thus tackling certain trails to further investigate the improvement of working conditions and the protection of workplace health within the associations from the ADMR Ille-et-Vilaine network.

1. Assurance maladie –Risques professionnels. (2016). Accidents du travail et maladies professionnelles : Chiffres clefs nationaux, tendances sectorielles, comparaison avec l'Allemagne. Dossier de presse, 1-21.

2. Direction de l'animation de la recherche, des études et des statistiques. (2018). Les services à la personne en 2016. DARES Résultats, (17). <https://dares.travail-emploi.gouv.fr/IMG/pdf/2018-017.pdf>

3. Ministère des solidarités et de la santé. (2018). Grand âge et autonomie : les chiffres clés.

<https://solidarites-sante.gouv.fr/affaires-sociales/personnes-agees/concertation-grand-age-et-autonomie/article/grand-age-et-autonomie-les-chiffres-cles>

## The relationship between stressful situations and psychological distress in emergency department nurses and the moderating effect of work factors and recovery outside work.

N. De Wijn\*<sup>a</sup> (Ms), M. Van Der Doef<sup>a</sup> (Dr)

<sup>a</sup> Leiden University, Leiden, NETHERLANDS

\* a.n.de.wijn@fsw.leidenuniv.nl

**Aims.** This study aims to identify factors that buffer or intensify the relationship between stressful situations and psychological distress (emotional exhaustion and PTSD symptoms) in Emergency Department (ED) nurses.

**Background.** Part of the job of an ED nurse entails dealing with stressful situations including emotionally demanding situations (e.g. patients resisting treatment) and aggression from patients and/or accompanying persons. Previous research has shown that ED nurses are not immune to these kinds of working conditions, as the number of stressful situations ED nurses encounter is directly related to psychological distress (Adriaenssens et al., 2012). Based on the Job Demands-Resources model (Demerouti et al., 2001) and the effort-recovery model (Meijman & Mulder, 1998) we predict that certain work factors and recovery experiences might buffer or intensify this relationship.

**Method.** A cross-sectional study was carried out in 19 ED's in the Netherlands (N=697). Data was collected by means of the Maslach Burnout Inventory (MBI), the Impact of Events Scale (IES), an inventory of stressful situations, the Leiden Quality of Work Questionnaire for Nurses (LQWQ-n) and the Recovery Experiences Questionnaire (REQ). Multiple hierarchical regression analyses were performed controlling for age, job title (registered versus in training), supervisory position and informal care tasks outside work.

**Results.** Both the frequency of emotionally demanding situations as well as the frequency of aggressive incidents were directly related to more emotional exhaustion (respectively,  $\beta = .17, p < .01, \beta = .22, p < .01$ ) and PTSD symptoms (respectively,  $\beta = .08, p < .05, \beta = .10, p < .01$ ) in ED nurses. Lower emotional exhaustion was found in nurses who experienced more autonomy, less work demands, higher social support from their supervisor and more recovery experiences outside work (in terms of mastery, psychological detachment and relaxation). Lower PTSD symptoms were found in ED nurses who experience less work demands and more recovery outside work (in terms of psychological detachment). In terms of buffering factors, social support from the supervisor buffered the relationship between emotionally demanding situations and emotional exhaustion, whereas social support from the colleagues buffered the relationship between aggressive incidents and emotional exhaustion. The recovery experience dimension 'relaxation' buffered the relationship between the frequency of emotionally demanding situations and PTSD symptoms.

**Conclusion.** The current study shows that job resources and individual resources (recovery experiences) have a direct positive effect on psychological distress in ED nurses, and in some cases even buffer the relationship between stressful situations and psychological distress. As stressful situations are inherent to the job of an ED nurse and difficult to reduce, it would be worthwhile to ensure adequate levels of job resources and stimulate recovery experiences outside work to protect ED nurses for psychological distress.

## Gender, age, and immigration background interaction: impact on work-life balance satisfaction and employee mental health

M. Boulet\*<sup>a</sup> (Prof)

<sup>a</sup> École nationale d'administration publique, Québec, CANADA

\* maude.boulet@enap.ca

**Objective:** Following the suggestion of Özbilgin et al. (2011) to examine the work-family balance with an intersectional approach based on workforce diversity, this study aims to explore the interaction between gender, age and immigration to ascertain how it affects employee work-family balance satisfaction and mental health. This analysis is relevant in a context of increasing labor force diversity (Shore et al. 2018) and considering that experiencing work-family conflict causes stress, reduces well-being and harms the mental health of workers (Allen et al. 2000). Barak and Levin (2002) have also shown that women and members of ethnic minorities are more likely to feel excluded in their organization, leading to lower job satisfaction and reduced well-being.

**Method:** Using Canadian data from the 2011 General Social Survey, we examined the satisfaction with work-life balance (*satisfied, neutral or dissatisfied*) and psychological health (*excellent, very good, good, average or bad*) through the lens of gender (*male or female*), age (*young: 18 to 34; prime working age: 35 to 54; older: 55 and over*) and immigration background (*native or immigrant*). The originality of our approach is to combine the three aspects of diversity to form a single variable in order to capture the differences between population groups. Our final sample consisted of 10 306 Canadians workers aged between 18 and 65 years old.

**Results:** Our results indicate that, compared to the reference category (*native male aged between 35 and 54*), almost all groups show a lower level of satisfaction with the work-family balance. Based on an ordered logistic regression model, we found that Canadian-born older male workers are the only category that tends to be more satisfied with their work-life balance compared to the reference group. The intersections of the female sex with the other diversity variables appear particularly penalizing. For example, immigrant women aged 18 to 34 are 75% more likely to be dissatisfied with their work-life balance than the reference category, compared to 68% for women of prime working age and 55% young native women. Regarding psychological health, the satisfaction of work-family balance emerged as a strong predictor; this satisfaction increases the likelihood to report excellent mental health. Native women of prime working age and immigrant women aged 55 and over are less likely to report excellent mental health than the reference category. Finally, the observed odds ratios are higher when gender, age, and immigration are combined than when these variables are accounted for separately in our models.

**Conclusion:** These first results show the relevance of using the intersectional approach to study the work-family balance and psychological health since their combined effect is stronger than their individual effect. This approach, therefore, seems promising to understand the challenges underlying the growing diversity of the workforce, since it does not focus on identifying general trends that ultimately reflect poorly the reality of all the population groups.

1. Özbilgin, M. F., Beauregard, T. A., Tatli, A., & Bell, M. P. (2011). Work-life, diversity and intersectionality: A critical review and research agenda. *International Journal of Management Reviews*, 13(2), 177-198.
2. Shore, L. M., Cleveland, J. N., & Sanchez, D. (2018). Inclusive workplaces: A review and model. *Human Resource Management Review*, 28(2), 176-189.
3. Barak, M. E. M., & Levin, A. (2002). Outside of the corporate mainstream and excluded from the work community: A study of diversity, job satisfaction and well-being. *Community, Work & Family*, 5(2), 133-157.

## **Job resources and wellbeing: Longitudinal associations in a nationally representative sample of German employees**

I. Schoellgen<sup>\*a</sup> (Dr), A. Schulz<sup>a</sup> (Ms)

<sup>a</sup> Federal Institute for Occupational Safety and Health, Berlin, GERMANY

\* schoellgen.ina@baua.bund.de

The present study investigates time-lagged effects between job resources and wellbeing as well as associations between *changes* in job resources and wellbeing, with the Job Demands-Resources Model (Bakker & Demerouti, 2017) providing the theoretical background. Longitudinal data from two occasions of measurement, five years apart, were taken from the Study on Mental Health at Work (S-MGA), a nationally representative sample of German employees, aged 31 - 60 years at baseline. Job resources comprised influence at work, control over working time, possibilities for development, role clarity, social support from colleagues, and quality of leadership. Indicators of general wellbeing (life satisfaction, positive affect) as well as work-related wellbeing (job satisfaction, work engagement) were included. Cross-lagged panel analyses with 2,173 employees showed that time-lagged associations between job resources and wellbeing were small and varied by indicator of wellbeing. Results of multiple regressions suggested that change in job resources explained more variance in wellbeing than baseline levels of the respective job resources. These findings point to the importance of considering changes in working conditions to gain a deeper understanding of associations between work and wellbeing.

1. Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273-285. doi: 10.1037/ocp0000056



## Work-related stress and psychosocial work conditions

H. Sigursteinsdottir\*<sup>a</sup> (Dr)

<sup>a</sup> University of Akureyri, Akureyri, ICELAND

\* hjordis@unak.is

Health, as defined by the World Health Organization (WHO), encompasses a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. The aim of the study was to examine work-related stress and psychosocial work conditions of municipal employees, particular kindergarten and primary school teachers. Four research questions were asked: (1) How did kindergarten and primary school teachers feel at the end of the workday last three months? (2) Did kindergarten and primary school teachers feel differently at the end of the workday last three months than other municipal employees? (3) What is the connection between working conditions of kindergarten and primary school teachers and the feeling of being stressed at the end of the workday? (4) What is the connection between working conditions of kindergarten and primary school teachers and the feeling of being burned out at the end of the workday? This study is based on an electronic questionnaire survey submitted to all employees of one municipality in Iceland (total 1.566) in autumn 2016. The response rate was 70.2%. Kindergarten and primary school teachers were 45.2% of the respondents.

The results show that 35.4% of kindergarten and primary school teachers were found to be very often or rather often stressed by the end of the workday in the last three months and 49.7% were found to be very or rather often burned out by the end of the workday in the previous three months. There was no difference between kindergarten teacher and primary school teachers regarding wellbeing at the end of the workday, neither regarding experience stress or burn out. But the results showed that kindergarten and primary school teachers were to a far greater extent than other municipal employees stressed and burned out by the end of the workday in the last three months ( $p < 0.05$ ). There was a positive link between various questions regarding working conditions and being stressed and burn out by the end of the work day last three months. That means that the wellbeing of the kindergarten and primary school teachers was better at the end of the workday for those who experienced better working conditions. Strongest connections were between being stressed and burn out by the end of workday and experience a balance between work and home life, satisfaction with management and general job satisfaction. The results showed the importance of good working conditions. The results of this study will hopefully lead to better considerations of the stressful factors in the working environment of kindergarten and primary school teachers in the future.

## **Curvilinear connections of effort-reward imbalance with stress and work engagement**

J. Tanskanen\*<sup>a</sup> (Mr), L. Mäkelä<sup>a</sup> (Prof), R. Viitala<sup>a</sup> (Prof)

<sup>a</sup> University of Vaasa, Vaasa, FINLAND

\* jussi.tanskanen@uva.fi

The effort-reward imbalance (ERI) model states that if employees do not gain enough rewards to compensate the effort they are putting in to work it will have a negative effect on employees' well-being. Employees' effort at work manifest in the time and energy they invest. Reward are not limited to salary and bonuses, but include intangible rewards such as esteem, promotion prospects, and job security, which can be more important. The main argument of the ERI model is that the balance between effort and reward (i.e. synergistic effect) explains outcomes over and above the separate effects. It is the imbalance between efforts and rewards, more specifically high effort combined with low reward, that matters. A strong empirical evidence connects ERI with stress, strain and long term adverse health outcomes, but only a few studies have examined work engagement with the ERI model and with mixed findings.

Imbalance between efforts and rewards has been often operationalized in studies as a ratio of efforts and rewards (ERI-ratio). Unlike the previous research based on linear analyses, this study utilizes curvilinear modelling to examine different balances of effort and reward (ERI-ratio) and their possible nonlinear effects on stress and work engagement.

A Finnish sample (M=1701) collected from multiple service-sector organizations between 2011 and 2012 was analysed with nonparametric generalized additive model (GAM). The results revealed that ERI-ratio had curvilinear relationships with both stress and work engagement such that higher reward compared to effort (over-rewarding) did not predict more lower stress or higher work engagement after certain point. Regarding work engagement, the balance between effort and reward was as good as high reward combined with low effort. For stress, it was beneficial to gain a slightly more reward than effort. Regarding both outcomes, under-rewarding was strongly connected with adverse health as it predicted high levels of stress and low levels of work engagement. Thus, the study emphasize the importance of employees feel they are gaining reward according to their effort.

## Prevention of musculoskeletal disorders using smart workwear

C. Lind<sup>a</sup> (Dr), M. Forsman<sup>\*a</sup> (Prof), L. Sandsjö<sup>b</sup> (Dr)

<sup>a</sup> Karolinska Institutet, Stockholm, SWEDEN ; <sup>b</sup> University of Borås, Borås, SWEDEN

\* mikael.forsman@ki.se

Work-related musculoskeletal disorders (WMSDs) constitute major challenges globally, and are linked to large economic burden and risk of premature exit from the labour market. Exposure to major WMSDs risk factors such as adverse postures, repetitive upper-limb movements and manual handling are frequent in the working population. Risk assessment constitutes an important part in management of WMSDs and needs reliable and precise exposure assessments to identify job tasks which may induce increased risk of WMSDs. Due to intra- and inter-worker variability of the biomechanical exposure, repeated assessments of multiple workers are usually needed. Such assessments are resource demanding if they are based on visual observation and then they also often have a poor reliability. Therefore, measurement strategies for practitioners, such as ergonomists, could be improved if complemented by direct measurement techniques provided that they are efficient and easy to use.

This paper presents an ambulatory system which incorporates direct measurement techniques targeted to support practitioners for reliable and cost-efficient exposure assessments.

The system is noninvasive and integrates sensors such as inertial measurement units (IMUs) with functional workwear consisting of a T-shirt and a glove. The signals from the sensors are transmitted to a local android-based system (i.e. tablet or smart phone) and are evaluated, in real-time, against research-based decision criteria. The system provides assessment of postures and movements of the trunk, upper arms and wrists, and hand force exertions. The real-time data can be used for identifying the exposure of specific job-task elements or can be used for training of workers to reduce the biomechanical exposure. The system also gives accumulated exposure assessments which can be used as a general risk assessment for a specific work task or for the accumulated exposure of a rotation schedule.

Currently, different types of feedback is tested including visual, auditory (voice instructions) and vibrotactile feedback as well as how the feedback best should be presented visualized to fit different users. Former evaluations of the system indicate that accurate measurements can be obtained for flexion and rotation of the trunk.

The smart workwear system has the potential to provide cost-efficient exposure assessments which can be used by the occupational health services for risk assessments and training of employees to improve their work technique. Hence, the smart workwear system has the potential to support prevention of adverse exposure targeting the organizational and technical level as well as the work technique of individual employees.



22·23·24  
**MAY** 2019  
PARIS ISSY-LES-MOULINEAUX



**Wellbeing**  
at work in a changing world:  
CHALLENGES AND OPPORTUNITIES

perosh  
International Organization  
for Occupational Health and Safety

inrs  
Institut National de Recherche et de Sécurité



© Eva Minnen/INRS

# Thursday, 23th

**09:50 – 11:20**

**PARALLEL SESSIONS**

**p. 57 – p. 73**

Auditorium

**ORAL COMM:**

To be a "good" leader: conditions to improve leader development

Room Molière

**SYMPOSIUM: "Achieving healthier workplace"**

Room 6

**ORAL COMM: The role of leadership in employees wellbeing at work I**

Room 5

**ORAL COMM: Wellbeing at work of different groups of workers:  
young, ageing and low vitality people**

**11:50 – 12:50**

**PARALLEL SESSIONS**

**p. 74 – p. 85**

Auditorium

**ORAL COMM: Workplace health promotion II**

Room 9

**ORAL COMM: Psychosocial working conditions and wellbeing I**

Room 5

**ORAL COMM: Burnout and withdrawal behavior**

Room 6

**ORAL COMM: Work and health II**

**14:35 – 16:05**

**PARALLEL SESSIONS**

**p. 86 – p. 105**

Auditorium

**SYMPOSIUM: "Improving organizational health intervention by integrating process,  
context, and outcomes"**

Room 6

**ORAL COMM: Global models of wellbeing at work and health**

Room Molière

**ORAL COMM: The role of leadership in employees wellbeing at work II**

Room 5

**ORAL COMM: Specific working conditions and wellbeing at work**

Room 9

**ORAL COMM: Innovative ways to transform work**

**17:10 – 18:10**

**PARALLEL SESSIONS**

**p. 106 – p. 112**

Room 6

**WORKBENCH**

Room 9

**ORAL COMM: Psychosocial working conditions and wellbeing II**

Auditorium

**ORAL COMM: Workplace health promotion III**

## 'Being' a leader: value of mindfulness for leader development

L. Urrila\*<sup>a</sup> (Ms)

<sup>a</sup> University of Vaasa, Vaasa, FINLAND

\* laura.urrila@uva.fi

The purpose of this paper is to investigate how mindfulness interventions could support leader development. Leaders have a great impact on employees and outcomes, which is why efforts are focused on developing their leadership capabilities. Due to individual needs and demands of the continuously changing business environment, however, leaders need to take responsibility over their own development to acquire capabilities such as adaptability, flexibility, emotional intelligence and ability to navigate change. In fact, leader development research and practice have seen a shift towards more flexible development strategies and leader *self*-development to complement formal development programs. The ability to influence oneself - one's thinking, feeling, acting and interacting - has become an essential skill to anyone aspiring to be a great leader. In addition, awareness of one's experience is claimed to be foundational for leadership effectiveness. Mindfulness, a human state of consciousness commonly defined (originally by Jon Kabat-Zinn) as "awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment", has become a standard element of leadership development programs. Discussing supervisors' and leaders' abilities to lead themselves before others, emphasis is on the perceptual, emotional and sensing qualities, which mindfulness training may help develop. Indeed, being a leader starts from within. Through a literature review on leader self-influencing and organizational mindfulness, this paper directs scholarly attention towards the transformational capacity of mindfulness as a way of 'being' and inspiration for deeper personal impact. Research associates mindfulness with greater mental and physical well-being, improved attention, self-awareness, self-regulation, perspective-taking and decreased negative affect, and organizational-level matters related to personal, relational and organizational functioning. The understanding that an individual's mindfulness influences not just the person themselves but other people, makes this quality significant from leadership perspective. Within management science, research from this perspective is still scarce. Recent studies indicate value in the connection between mindfulness and leader development, suggesting that mindfulness practice could enhance leader's awareness, flexibility and creativity. Mindfulness develops the natural human capacity to directly experience the present moment instead of through conceptions filtered with biases from previous experiences, provides tools to manage attention over distractions, handle emotional reactions and improve relationships, making space for deeper connection with oneself to realize one's values and motivations. This paper posits that mindfulness is a relevant leader development method that can add to existing organizational programs and tools. It makes a contribution by addressing the highlighted shortcoming within organizational mindfulness research for leadership, and supports organizational practitioners in leveraging mindfulness for individuals and teams.

1. Goldman-Schuyler, K., Skjei, S., Sanzgiri, J. & Koskela, V. (2017). "Moments of waking up": A doorway to mindfulness and presence. *Journal of Management Inquiry* 26: 1, 86–100.
2. Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., Baer, R. A., Brewer, J. A. & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management* 42: 1, 114–142.
3. Hunter, J. (2015). Teaching managers to manage themselves: mindfulness and the inside work of management. In Reb, J. & Atkins, P. W. B. (Eds.). *Mindfulness in Organizations*, 355–382. Cambridge: Cambridge University Press.

## The role of the line manager in implementing organizational interventions – experiences from the ARK-programme

M. Christensen\*<sup>a</sup> (Dr)

<sup>a</sup> Norwegian University of Science and Technology, Trondheim, NORWAY

\* [marit.christensen@ntnu.no](mailto:marit.christensen@ntnu.no)

**Purpose:** The aim of this presentation is, by showing the results and experiences from ARK-programme, suggest what the line managers need and has to provide for a successful intervention project using the IGLO-model. We would like to contribute to more understanding of how the line managers' job crafting and subsequent intervention behavior is influenced by the context. Nielsen and Miraglia (2016) suggest that a more in-depth understanding of the content and process mechanism of interventions could help improve the outcomes related to employees' wellbeing and health, and that the context would determine if these mechanisms are triggered or not. We will therefore use the IGLO-model to understand how the line managers are influenced by the context at the Individual, Group, Leader and Organisational level throughout the five phases of the ARK-intervention

**Design:** Findings are based on both experiences from the ARK-programme and results from 20 semi-structured qualitative interviews with line managers in one large Norwegian university. ARK 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 (Innstrand et al., 2015). ARK is built on the suggested five phases of Nielsen et al (2010) as a framework for the processual work with organizational development including 1) initiation, 2) screening, 3) development of interventions, 4) implementation of interventions, and 5) evaluation of interventions.

**Results and conclusions:** The line manager is important and crucial for successful interventions in all the five phases. Line managers can make or break an intervention, but they might not always be the villains of the piece. The line managers underlined the importance of the cooperation and trust between the safety representative and themselves in a successful process. The line managers also reported challenges working with a bottom-up profile trying to develop concrete interventions based on assessments of abstract psychological concepts in survey measures. Context plays an important role, and resources at all four IGLO-levels: 1) The leader's own personal resources, 2) the resources inherent within the work group 3) the support of senior management and 4) the organisational context. A more in-depth understanding of how the context influences the line managers' mental models and actions will make it easier to develop the most constructive framework regarding training, tools and support systems for the line manager in the intervention process.

1. Innstrand, S. T., Christensen, M., Undebakke, K., 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). doi/10.1177/1403494815600562.
2. Nielsen, K., Randall, R., Holten, A.L., & González, E.R. (2010). Conducting organizational-level occupational health interventions: What works? *Work & Stress*, 24(3), 234–259. <https://doi.org/10.1080/02678373.2010.515393>
3. Nielsen, K., & Miraglia, M. (2016). Critical essay: What works for whom in which circumstances? On the need to move beyond the "what works?" question organizational intervention research. *Human Relations*, 1.23 DOI: 10-1177/0018726716670226



## How organisational culture and climate affect the leadership-health relationship in the face of change

T. Schröder\*<sup>a</sup> (Mr)

<sup>a</sup> Federal Institute for Occupational Health and Safety (BAuA), Dortmund, GERMANY

\* schroeder.tim@baua.bund.de

**Purpose:** In leadership research leadership styles and behaviour as predictors of employees' health have been analysed extensively (Montano et al. 2016). Two aspects, however, remain largely neglected: How is the connection between leadership and health moderated by organisational and leadership culture and climate? Are organisations which undergo profound change processes differently affected?

In this study, we aim to fill this research gap. We contribute to the previous research in two ways. First, we start with a theoretical elaboration of the notions of organisational strategy, structure, culture and climate. This implies a differentiation of the emergent levels of the organisation, the leader-follower-relationship and the individual. In the relevant literature these concepts and levels are often theoretically intermingled and, as a result, poorly operationalised (for a discussion see Schneider et al. 2017).

Second, after the clarification of concepts hypotheses regarding the moderating effects of culture and climate on the relationship between leadership behaviour and subjectively perceived health of employees are developed and tested using a representative, large-scale dataset. We assume that the lack of a supportive culture and climate has a strongly detrimental impact on health-promoting leadership behaviour, especially on the level of the leader-follower-relationship. Furthermore, the impact should be stronger in establishments facing organisational change, like digitalisation.

**Design/ Methodology:** The empirical analyses are based on the "Linked-Personnel-Panel" (LPP) of the German Institute for Employment Research (IAB) (Broszeit et al. 2016). The LPP combines data from a panel survey (2012-2016) of German employees with panel-survey information on the establishments in which the employees are working. The data are representative for establishments in the private sector with at least 50 employees. Structural equation models are used to assess the presumed interrelations.

**Results:** Preliminary analyses of the LPP show that a supportive and fair culture and climate, unlike top-management strategies implemented in structural devices (e.g. health management audits), have independent positive effects on the health of employees. The effects are stronger on the level of the leader-follower relationship as on the level of the organisation as a whole. Additional evidence shows that the detrimental (short-term) health-effect of digitalisation (only) in the manufacturing sector is mitigated by social support of supervisors. Thus, our preliminary results tend to support the hypotheses. Further analyses on the link between culture/climate, leadership behaviour and health outcomes in organisations (not) facing change process are still in progress.

**Limitations:** Particularly the highly ambiguous, multidimensional and mostly latent concept of organisational culture can hardly be captured appropriately by quantitative surveys. The quantitative analysis should be complemented by qualitative fieldwork. Future work within the project "Leadership and Organisation in the Changing World of Work" (BAuA) will be carried out in this direction.

**Implications / Value of the paper:** By identifying the allegedly "soft" but powerful mechanisms generating the health-promoting impact of leadership behaviour, the paper highlights the importance of organisational context in general and the culture and climate dimensions in particular. It thus contributes to an understanding of how communication and exchange processes within the organisation are shaped beyond formal structure.

1. Montano, D., Reeske-Behrens, A., & Franke, F. (2016). Psychische Gesundheit in der Arbeitswelt. Führung. Dortmund, Berlin, Dresden: BAuA.
2. Schneider, B., Gonzalez-Roma, V., Ostroff, C., & West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology*, 102(3), 468-482. doi:10.1037/apl0000090
3. Broszeit, S., Grunau, P., & Wolter, S. (2016). LPP – Linked Personnel Panel 1415. Quality of work and economic success: longitudinal study in German establishments. FDZ data report, 06/2016.

## Resources and constraints related to psychological health: the case of managers in healthcare sector

MH. Gilbert<sup>\*a</sup> (Prof), J. Dextras-Gauthier<sup>a</sup> (Prof), M. Boulet<sup>b</sup> (Prof), I. Auclair<sup>a</sup> (Prof), J. Dima<sup>a</sup> (Ms)

<sup>a</sup> Université Laval, Québec, CANADA ; <sup>b</sup> École nationale d'administration publique, Québec, CANADA

\* Marie-Helene.Gilbert@fsa.ulaval.ca

**Objective:** Based on the model developed by Nielsen et al. (2017), the aims of this study is to identify the resources and constraints that can influence the psychological health of managers in healthcare sector. Maintaining a healthy and productive workforce continues to be a challenge for many organizations (Kowalski & Loretto, 2017). This is especially true for organizations in healthcare sector where many hospitals are experiencing staff shortages and work overload among employees and also managers. Given that the majority of studies focus on employees' psychological health, this study focuses instead on managers' psychological health. Managers' working conditions are particularly characterized by work overload, lack of recognition, work-family conflicts and a lack of autonomy (e.g. Bolduc & Baril-Gingras, 2010; Pelletier, 2014). They also report a high level of stress (APEX, 2013). Given that depleted leaders tend to adopt abusive supervision behaviors (Byrne et al., 2014), thus influencing the health and performance of their employees (Lundqvist et al., 2012), it appears relevant to examine the different factors that affect their psychological health.

**Method:** Our sample is composed of executive, intermediate and first level managers from a hospital in the province of Quebec, in Canada. It is composed of 73% female managers and the average age is 45. Also, the average seniority in a management position is between 6 and 10 years. A total of 75 semi-structured interviews were conducted in 2017. A qualitative approach was chosen to give a voice to the managers and to document the different resources and constraints in their work. The interviews were recorded and transcribed for a posteriori analysis. A tree of codes was realized by the researchers based on the model developed by Nielsen et al. (2017) and the coding of the interviews was done by a professor in HRM. Code sequences analysis were performed using the QDA Miner software.

**Results:** Our results highlight the importance to consider not only resources, but also constraints in examining managers' psychological health. Indeed, organizational constraints seem to play an important role in the stress experienced by them. In addition to the four levels of resources proposed by Nielsen et al. (2017): Individuals, Group, Leader, and Organization (IGLO), a fifth level appears relevant to consider: the managers' employees.

**Conclusion:** This study enriches our understanding of the experience of managers in healthcare institutions. This study also identifies resources and constraints that can influence the psychological health of managers in order to promote better organizational health. Our results indicate that it is necessary to work at the same time on the reduction of organizational constraints and the setting up of resources. Finally, it appears relevant to add the employee level to the IGLO model (Nielsen et al., 2017) when referring to the health of managers. Employees can be perceived as a constraint, but also as a resource for managers.

1. Nielsen, K., Nielsen, M. B., Ogbonnaya, C., Käsälä, M., Saari, E., & Isaksson, K. (2017). Workplace resources to improve both employee well-being and performance: A systematic review and meta-analysis, *Work & Stress*, 31(2), 101-120.
2. Lundqvist, D., Eriksson, A. F., & Ekberg, K. (2012). Exploring the relationship between managers' leadership and their health. *Work*, 42, 419-427.
3. Byrne, A., Dionisi, A. M., Barling, J., Akers, A., Robertson, J., Lys, R., Wylie, J., & Dupré, K. (2014). The depleted leader: The influence of leaders' diminished psychological resources on leadership behaviors. *The Leadership Quarterly*, 25, 344-357.

## Achieving Healthier Workplaces

ST. Innstrand\*<sup>a</sup> (Prof)

<sup>a</sup> Norwegian University of Science and Technology, Trondheim, NORWAY

\* siw.tone.innstrand@ntnu.no

### Symposium summary:

To promote healthy workplaces in a changing world is highly significant, but also implies challenges and opportunities. The aim of this symposium are to share state-of-the-art knowledge, best practices and innovations on how to arrange for a healthier workplace. Moreover, it offers an Integrated, Multi-Level Model of Employee Health and Well-Being.

Dr. Banks will start this symposium by presenting a new integrated, multi-level model of employee health and well-being. Through a collaboration with the consortium in the symposium, the Interdisciplinary Center for Healthy Workplaces (ICHW) have updated their HealthyWorkplaces Model to enable a more robust test of explanatory factors and to direct actions that provide the greatest promise. In her presentation, Banks introduces the model and the science and theories underlying it and briefly discusses implications for research and practice.

In the second presentation, Professor Innstrand will provide a practical example on how to create psychosocially healthy workplaces by introducing the ARK intervention programme. Building upon the Job demand- resource model (JD-R model) the ARK intervention programme aim to reduce both the health impairment process as well as increase a motivation process among employees by a bottom up approach. The ARK intervention programme has been conducted among 18 universities and university colleges in Norway and one university college in Sweden. Implementation strategies and gained experiences will be discussed.

In the third presentation, Dr. Heikkilä-Tammi follow up by suggesting how to develop wellbeing-supporting work practices in the digitalizing work environment. By presenting results of a mixed-method action research project she describes the process of developing organizational practices and provide examples of the practices the participants developed to enhance information ergonomics in their work.

Finally, Professor Maslach will present different intervention strategies for healthier workplaces. More specifically, she suggest that six paths to a healthy workplace would include a sustainable workload; choice and control; recognition and reward; a supportive work community; fairness, respect, and social justice; and clear values and meaningful work. In her presentation, she will discuss the possibilities of achieving a better job-person fit within all six worklife areas, and thus a healthier workplace.

### List of contributors:

#### 1. An Integrated, Multi-Level Model of Employee Health and Well-Being

*Cristina G. Banks, Ph.D, Interdisciplinary Center for Healthy Workplaces (ICHW), University of California, Berkeley*

#### 2. Creating healthy workplaces- the ARK intervention programme

*Siw Tone Innstrand, Ph.D. and Marit Christensen, Ph.D. NTNU Center for Health Promotion Research, Norwegian University of Science and Technology, Norway*

#### 3. Developing wellbeing-supporting work practices in the digitalizing work environment

*Laura Bordi and Kirsi Heikkilä-Tammi, Ph.D. Wellbeing at Work Research Group, University of Tampere, Finland*

#### 4. Intervention Strategies for Healthier Workplaces

*Christina Maslach, Ph.D. Interdisciplinary Center for Healthy Workplaces (ICHW), University of California, Berkeley*

## An integrated, multi-level model of employee health and well-being

C. Banks\*<sup>a</sup> (Dr)

<sup>a</sup> University of California, Berkeley, Berkeley, UNITED STATES

\* cbanks@berkeley.edu

How do we develop a model of employee health and well-being that attempts to explain *how employee health and well-being is achieved* and takes into consideration organizational context, different levels of intervention, and knowledge from multiple disciplines, in order to create truly healthy workplaces? Through a collaboration with NTNU's Center for Health Promotion Research and University of Tampere's Wellbeing at Work Research Group, the ICHW updated their HealthyWorkplaces Model to enable a more robust test of explanatory factors and to direct actions that provide the greatest promise.

The Model starts with an assessment of how an organization operates as a healthy, productive workplace and actively promotes employee well-being. One cornerstone of this assessment is an understanding from multi-disciplinary research of ways health and well-being can be observed in *how people perform their work, interact with others, and make choices at work*. This assessment goes beyond description of organizational policies, procedures, expectations, work processes, and leadership styles; rather, it examines the *impact* of such on employee behavior. For example, do employees work consistently more than eight hours per day because tasks are not completed? Do employees come to work sick or disabled? Do managers discourage workers from taking earned days off? Whether these behaviors are voluntary or not, an organization that explicitly or implicitly encourages unhealthy work behaviors would not be considered a healthy workplace. Several areas of organizational functioning are covered and address the physical, social, psychological, and emotional environments in which people work.

Another cornerstone is how people's behaviors relate to their basic human needs. It has been shown that satisfaction of basic human needs is key to people's health and well-being (Maslach & Banks, 2017). Being able to satisfy basic needs through the design of work and work environments has been linked to positive personal and organizational outcomes (e.g., job satisfaction, engagement, commitment, absenteeism, turnover, productivity), contributing to employee health and well-being. Seven key needs have been identified based on the research literature, and these have been further distinguished as those that promote ability to perform effectively and work motivation. The model further distinguishes how needs can be satisfied at the individual, co-worker, group, leadership and organizational levels. These features of the model help to pinpoint where in the organization and what interventions are needed.

Next, the model directs types of interventions that are likely to bring about need satisfaction based on the unhealthy behaviors identified in the assessment. The success of interventions can be evaluated by changes in targeted behaviors as well as higher order outcomes. This presentation introduces the model and the science and theories underlying it and briefly discusses implications for research and practice.

1. Maslach, C., & Banks, C. (2017). Psychological connections with work. In C.L. Cooper & M.P. Leiter (Eds.), *The Routledge Companion to Wellbeing at Work*. NY: Routledge.

## Creating healthy workplaces- the ARK intervention programme

ST. Innstrand\*<sup>a</sup> (Prof), M. Christensen<sup>a</sup> (Dr)

<sup>a</sup> Norwegian University of Science and Technology, Trondheim, NORWAY

\* siw.tone.innstrand@ntnu.no

ARK (a Norwegian acronym for work environment and climate study) is a holistic intervention programme, aimed to improve the health and well-being among academic staff (Innstrand, Christensen, Undebakke, & Svarva, 2015). The ARK intervention programme has been conducted among 18 universities and university colleges in Norway and one university college in Sweden. The corresponding survey has collected information on the employees' perception of the psychosocial work environment, well-being, and health from over 20.000 respondents. The aim of the present presentation is to introduce the ARK project and provide suggestions on how to conduct a health promoting intervention program in a university setting based on the experience and knowledge collected from ARK. This understanding can inform and inspire the planning of future health promoting workplace initiatives to meet the distinctive needs of its employees.

Building upon the Job demand- resource model (JD-R; Bakker & Demerouti, 2007) the ARK intervention programme aim to reduce both the health impairment process as well as increase a motivation process among employees by a bottom up approach. More specifically, the intervention programme follows a five-step procedure from preparation (1) to screening (2), action planning (3), implementation (4) and finally evaluation (5). The ARK process is repeated at regular intervals of two or three years, and the work with the psychosocial work environment should be systematic and ongoing the entire time. Quantitative and qualitative research are conducted on the implementation processes to inform and improve the intervention programme further. Moreover, quantitative research is conducted all data gathered in the screening phase which is stored in a common databank. The latter provides important feedback on relationships of importance for the academics in line with the JD-R model.

So far, experience and research from ARK suggest that the strength of its use lies in the following: (a) it utilizes a theoretical model that visualizes the associations between variables and enables the possibility to analyze and plan for actions; (b) it is sector specific; (c) it has a salutogenic perspective focusing on strengthening positive health assets and potentials; (d) it provides a systematic approach to the implementation process; (e) it is in line with health promotion initiatives as it provides a bottom-up approach; (f) it provides sector specific reference data (benchmarks); and (g) it establishes a safe and structured communication channel for the work environment and an awareness of the psychosocial work environment. Through this light ARK might serve as a pioneer and an example for good practice for other institutions that want to place the health and well-being of their employees on their agenda. It is hoped that the present presentation will stimulate health-promoting initiatives and encourage more research and best practices on Healthy Workplaces for the future.

1. Innstrand, S.T., Christensen, M., Undebakke, KG., & Svarva, K. (2015). The presentation and preliminary validation of KIWEST using a large sample of Norwegian university staff. *Scandinavian Journal of Public Health*, 43, 855-866.

2. Bakker, A. B. & Demerouti, E. (2007). The job demands-resources model: state of the art. *Journal of Managerial Psychology*, 22, 309 - 328.

## Developing wellbeing-supporting work practices in the digitalizing work environment

L. Bordi<sup>a</sup> (Ms), K. Heikkilä-Tammi<sup>\*a</sup> (Dr)

<sup>a</sup> Tampere University, Tampere, FINLAND

\* kirsi.heikkila-tammi@uta.fi

The information intensity of work is increasing in most fields and employees often need to operate in quite complex digital work environments to perform their everyday tasks. This may have various implications for wellbeing at work. The constant flow of information may cause interruptions, task fragmentation and increase the need for multitasking, which in turn often hinder concentration as well as increase workload and strain. In addition, the constant need to update technology skills may inflict feelings of frustration and uncertainty as well as increase time pressure. As the technology and information intensity of work increases, workplaces need to re-evaluate and develop their organizational practices to promote information ergonomics and wellbeing at work.

We present results of the mixed-method action research project “Enhancing productivity, customer experience and well-being at work through information ergonomics”. The project’s objective was to study how information ergonomics can be developed to enhance wellbeing at work and thus also productivity and the quality of customer service work. In this symposium, we concentrate on describing the process of developing organizational practices and provide examples of the practices the participants developed to enhance information ergonomics in their work. The research data consists of group discussions of nine workshops. The workshops were facilitated applying the method of Appreciative Inquiry (AI). Thirty-six employees of three organizations (an insurance company, a financial administration company, an industrial company) participated in the study. The method of qualitative content analysis was applied to the discussion data.

The three workshops all had a loose framework based of the AI approach. In the first workshop, the participants discussed the current situation in the digital work environment and recognized practices in the workplace that were already working and supporting their wellbeing. These included, for example, possibilities for remote work, support from co-workers, and options in digital tools. In the second workshop, the participants envisioned the ideal situation in the digital work environment, which mostly covered themes related to user-centered technology and control at work. In the third workshop, the participants discussed actions how to move closer to the ideal situation, as well as made a concrete scheme of how to implement the actions planned. The methods to reduce information load and support wellbeing at work mostly required organization or team-level actions, such as establishing shared rules for technology-mediated communication, involving employees in the implementation of new technology, providing opportunities for quiet time and not being available, as well as providing employees more autonomy to schedule and prioritize their tasks.



## Intervention strategies for healthier workplaces

C. Maslach\*<sup>a</sup> (Prof)

<sup>a</sup> University of California, Berkeley, Berkeley, UNITED STATES

\* maslach@berkeley.edu

Unhealthy jobs are characterized by workplace conditions that are highly stressful and toxic. These conditions (or stressors) pose a danger to the worker's well-being, both physically and psychologically. But, contrary to assertions that such conditions are necessary for organizational success, the evidence shows that these job stressors do *not* enhance either productivity or the financial bottom line (Pfeffer, 2018).

Stress responses among workers (such as impaired health or burnout) need to be recognized as a "red-flag" warning sign of an unhealthy work environment. Much like the canary in the coal mine, the reduced well-being of the workers is a critical sign of the toxic environmental conditions in the workplace, which need to be alleviated.

Toxic job conditions are poisonous, dangerous, or harmful to workers, and can lead to negative effects on their health. Physical hazards and threats to the workers' safety are usually what are thought of as toxic conditions, but there can also be social and psychological threats as well. The latter can be represented in at least six areas where there is a poor fit, or imbalance, between the person and the job (Leiter & Maslach, 2004): *work overload* (high demands and low resources), *lack of control*, *insufficient reward* (especially recognition), *breakdown of community* (relationships within the workplace), *absence of fairness*, and *value conflicts*.

However, we can think of these six areas in terms of their opposite goals of good job-person fit. Thus, the six paths to a healthy workplace would include a sustainable workload; choice and control; recognition and reward; a supportive work community; fairness, respect, and social justice; and clear values and meaningful work.

So how do we achieve a better fit between the worker and his/her job? The standard approach is to focus on the workers, and to do things to make them fit their job. First, there is training and education of the workers, which promotes the development of appropriate skills, and which also gives them practical experience for the job. Second, there are efforts to teach workers how to cope with job stressors. Some of these focus on developing personal resilience and strength, while others point to various ways to get some time away from the workplace. However, these individual solutions do not make the job less toxic.

Another approach is to fit the job to the worker. In other words, the goal is to modify the work conditions that create negative outcomes for people. This approach is not new - it is called ergonomics, and it focuses on the relationship between workers and their physical environment. This ergonomic model can also be extended to the social and psychological environment of workers.

Within this ergonomic model, job-person fit can be obtained by the satisfaction of seven core psychological needs (Maslach & Banks, 2017): Autonomy, belongingness, competence, positive emotions, psychological safety, fairness, and meaning. This presentation will discuss the possibilities of achieving a better job-person fit within all six worklife areas, and thus a healthier workplace.

1. Leiter, M. P., & Maslach, C. (2004). Areas of worklife: A structured approach to organizational predictors of job burnout. In P. L. Perrewe & D. C. Ganster (Eds.), *Research in occupational stress and well-being* (Vol. 3, 91-134). Oxford: Elsevier.
2. Maslach, C., & Banks, C. G. (2017). Psychological connections with work. In C. L. Cooper & M. P. Leiter (Eds.), *The Routledge companion to wellbeing at work* (37-54). NY: Routledge.
3. Pfeffer, J. (2018). *Dying for a paycheck: How modern management harms employee health and company performance – and what we can do about it*. Harper Collins, and Amazon e-book.

## **The empowering leadership as a determinant of psychological well-being at work: the predictor role of trust and meaning of the work.**

A. Caillé\*<sup>a</sup> (Mrs), C. Jeoffrion<sup>a</sup> (Prof), JM. Galharret<sup>b</sup> (Prof)

<sup>a</sup> University of Nantes - Psychology Laboratory of Pays de la Loire (EA 4638), Nantes, FRANCE ; <sup>b</sup> University of Nantes, Nantes, FRANCE

\* alison-caille@laposte.net

The evolution of the world of work and the emerging aspirations of employees (accomplishment at work, search for meaning, respect, esteem and recognition, etc.) have led organizations to reconsider their management methods by enhancing participative methods focusing on trust, autonomy, team work, collaboration and work/life balance. It turns out that managerial practices are essential resources to improve the well-being at work, which in returns enhance the performance. Indeed, well-being at work can be considered as a factor of productivity at the individual, organizational and societal levels.

Managerial innovation such as “Empowerment” is therefore increasingly popular within companies, from SME to multinational firm. Thus, we have choose to launch a study in an aerospace industry experimenting “empowering leadership” since four years, within a production unit of approximately 300 employees. The teams are self-organized and the managers aim to enhance the meaning of the work, to give autonomy and trust, and to involve the teams in the decision-making process.

In an action-research perspective, our survey intends to study the link between empowering leadership and well-being at work, while taking into account the organizational commitment as a moderator. A questionnaire, composed of scientifically validated scales (Bien-Etre Psychologique au Travail - Gilbert, *et al.*, 2011 ; Leadership Habilitant - Yahia *et al.*, 2018 ; Engagement au travail - Rich *et al.*, 2010 ; Engagement organisationnel - Meyer *et al.*, 1993), has been filled in by 260 employees of the “empowered unit” (95% of participation).

The results highlight the predictor role of “empowering leadership” on well-being at work. More specifically, as regards of each of the sub-dimensions of empowering leadership, the statistical analysis demonstrate that “giving meaning to the work” ( $\beta = 0.152$ ;  $p < 0.001$ ) and “showing confidence” ( $\beta = 0.089$ ;  $p < 0.05$ ) are the two behaviors of the leader that promote employees well-being on the workplace. However, the direct effect of the two sub-dimensions “participation in decision-making” and “autonomy” is non-significant on the psychological well-being at work. The results also show that the effect of the sub-dimension “giving meaning to the work” on the psychological well-being at work is moderated by the affective organizational commitment ( $\beta = 0.088$ ;  $p < 0.05$ ). It means that the more people are affectively involve in their company, the more the strength of the relationship between “giving meaning to the work” and the psychological well-being at work increases.

Our research brings significant theoretical contributions by investigating the “empowering” style of leadership as a determinant of well-being at work. In particular, the results of this survey bring to light the two mains “empowering” behaviors of the leader which foster the psychological well-being at work, namely giving meaning to the work and showing confidence. The affective commitment of employees towards their company can also be a good lever to improve the quality of life at work. The practical interest of this study is thus to provide recommendations to companies in order to support their initiatives of managerial innovation leading to a greater feeling of well-being in the workplace.

1. Gilbert, M.-H., Dagenais-Desmarais, V., & Savoie, A. (2011). Validation d’une mesure de santé psychologique au travail. *Revue européenne de psychologie appliquée*, 61, 195-203.
2. Rich, B. L., LePine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal*, 53, 617-635.
3. Yahia, N.A., Montani, F., & Courcy, F. (2018). Le rôle des stressseurs sur le comportement d’innovation : Quand le leadership habilitant du supérieur protège le potentiel d’innovation des travailleurs. *Psychologie du travail et des organisations* 24, 51-67.

## Distance with a leader and satisfaction with expatriate job

L. Mäkelä\*\*<sup>a</sup> (Prof), H. Kangas<sup>a</sup> (Ms), V. Suutari<sup>a</sup> (Prof)

<sup>a</sup> University of Vaasa, Vaasa, FINLAND

\* llbm@uva.fi

Internationalization of economies has increased dramatically in the past few decades. This trend has increased the need for internationally mobile and highly skilled employees. Expatriates, people living outside their home country due to their work, are a critical group of these international professionals. They have found to be essential assets for their employers, and therefore their experiences concerning their jobs need attention.

One crucial indicator of employees' experiences of their jobs is their satisfaction with it. Job satisfaction is defined as being positive emotional state resulting from the appraisal of one's job or job experiences. Satisfaction with one's job represents work success in general for an individual and leadership related antecedents have been linked to it in earlier literature in domestic study contexts.

This study focuses on expatriates' job satisfaction and how leadership is linked to it. In particular, with the help of COR theory, this research examines how two different kinds of distances -physical and functional, between the expatriate and his/ her immediate supervisor are related to satisfaction with the expatriate job. Physical distance is referring to the location of the leader (whether the immediate supervisor is working in the same country or different country than expatriate him/herself Functional distance between expatriate and immediate leader is studied with the help of the quality of Leader-Member Exchange (LMX) relationship. The study was conducted among 290 Finnish expatriates. A moderated hierarchical regression analysis shows that the quality of LMX was directly (positively) linked to satisfaction with the expatriate job but the location of the leader was not related to satisfaction with the expatriate job. However, expatriates whose LMX relationship quality was high experienced higher satisfaction with the expatriate job if they work in the same country with the supervisor compared to the situation when they work in different countries. Interestingly, expatriates suffering low-quality LMX relationships are more satisfied with the expatriate job if they work in a different country than their supervisor.

1. Bonache, J. (2005). Job satisfaction among expatriates, repatriates and domestic employees. *Personnel Review*, 34(1), 110–124.
2. Golden, T. D., & Veiga, J. F. (2008). The impact of superior-subordinate relationships on the commitment, job satisfaction, and performance of virtual workers. *Leadership Quarterly*, 19(1), 77–88.
3. Hobfoll, S. E. (2001). The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Applied Psychology*, 50(3), 337–421.

## **Diverse effects of leadership and management practices on working conditions and well-being at work: how can we prevent efficiently both mental and physical injuries at workstation?**

E. Garnier-Daujard\*<sup>a</sup> (Dr)  
<sup>a</sup> CENOLIA, Bourges, FRANCE  
\* el.garnier@wanadoo.fr

Speaking as an ergonomist and a psychologist I often receive workers who are or were suffering at work. And these workers suffer sometimes since a long time ago. They are managers or employees. When they decide to come to see a psychologist, their mental and/or physical health is very often injured (sometimes back pain, R.S.I., overwork, overstrain, burn-out, burn-in, bore out, etc.). The explanations and proposals mentioned in this paper are issued from results obtained on a sample of more than 5,000 diverse people I met, whether as patients or as working people investigated as concerns the prevention of occupational diseases (including mental diseases). Their problems were caused by working conditions and more specifically, I will apprehend and take the relationship between “toxic” management practices and occupational diseases.

Since approximately a quarter of century we successively have encountered stress, R.S.I., psycho-social risks, etc. but today we hear about well-being and pleasure at work. Those words “well-being” and “pleasure” seem to open and introduce a new approach concerning all occupational diseases in relationship with suffering at work. Can or could pleasure and well-being be found and felt at work? If yes, we have to examine the workplace and its surroundings (area, human environment, etc.). 30 years ago we elaborated a model that allows the ergonomist to include all the necessary and sufficient elements at one time and the links between all these elements in order to find and then to discover and apply adequate solutions, and thus in partnership and co-working with the managers and employees. Nowadays, I use this model to prevent suffering at work *on one hand* and *on the other hand* to handle patients who are suffering at the workplace.

**To meet the aim described in the title, I will limit my paper to the relationship between suffering at work and management methods.** Leaders and managers play an important role in the process that allows the men and women at work to reach well-being. What kind of well-being can or could be felt at work in relationship with the management practices? How can we recognize or identify the occupational well-being connected by “good” management methods and practices? Are these methods fact or fiction? Can suffering at work be avoided? If yes, could we act in a better direction to prevent the diseases encountered today and their negative evolutions and effects? **The answers are the purpose of this paper.**

**Writer and presentator: Eliane Garnier-Daujard, doctor of ergonomics and psychologist, CES souffrance-et-travail (i.e. suffering at work)**

1. Arendt, A. (1977). Between Past and Future. New-York: Penguin Group.
2. Dejours, C., Bensaïd, A., Guiho-Bailly, M.P, Lafond, P. Grenier-Pezé, M. (2010). Observations cliniques en psychopathologie du travail (Clinical investigations for psychopathology of labour and organisations). Paris: PUF.
3. Milgram, S. (1974). Obedience to authority: an experimental view. New-York : Harper and Row.

## **Workplaces' leadership quality and work ability - results from a questionnaire distributed to all Sweden's waste collectors**

M. Forsman\*<sup>a</sup> (Prof), M. Alderling<sup>b</sup> (Mr), SE. Mathiassen<sup>c</sup> (Prof)

<sup>a</sup> KTH Royal Institute of Technology, Stockholm, SWEDEN ; <sup>b</sup> Stockholm City Council, Stockholm, SWEDEN ; <sup>c</sup> University of Gävle, Gävle, SWEDEN

\* mikael.forsman@ki.se

### *Introduction*

The occupational group waste collectors may include workers with slightly different tasks. In this study the waste collectors are limited to those removing waste materials from households, in urban, suburban and country-side areas, to the disposal place. Several studies have identified different work-related health and safety risks for this group, most of which of physical nature. However it is well-known that psychosocial exposure also is an important risk factor for both physiological and mental work-related disorders.

The aim of this study was to investigate how the workplace's leadership quality including support from the supervisor is associated with self-assessed work ability among waste collectors.

### *Method*

A cross-sectional questionnaire study was performed. The questionnaire was distributed to all waste collectors in Sweden, about 2000, of whom about half answered the questions. The mean age among male respondents (96%) was 45 years, and the mean age among the women (4%) was 35 years.

A leadership index was created comprising six questions: four questions about the quality of leadership (development opportunities, prioritizing job satisfaction, work planning and solving conflicts) and two questions about supervisor support (general support from the supervisor, and to what extent the supervisor listens to problems concerning specific work tasks). The ratings of the questions five-step Likert scales were summed into the index, which was used to compute an average for each workplace. The workplaces was then ranked according to their average index, and divided into tertiles.

Three questions on perceived physical and mental work ability from the Work Ability Index (WAI) were used as outcome variables; self-assessed current work ability in relation to physical demands of the job, self-assessed current work ability in relation to the mental demands of the job, and the waste collector's own prognosis of his or her work ability in two years' time.

### *Results*

All the three outcome variables, i.e. physical and mental work ability, and the worker's own prognosis of his or her work ability in two years' time, were significantly lower in the workplace tertile of the lower leadership indexes: In these workplaces there were 25% with low self assessed physical workability, 27% with low mental workability, and 30% had an own prognosis of a low workability in two years' time. The corresponding percentages in the high leadership quality workplaces were: 10, 8 and 15%.

### *Conclusion*

The leadership quality of the waste collectors' workplaces was strongly correlated to the workers workability. Also in this occupation with a high physical workload the leadership quality seems important for both physical and mental workability, and to facilitate low staff turn-over and a high chance of workers working until retirement age. This should be considered in the recruitment and training of waste collector supervisors, and likely also in other heavy manual work job occupations.

## **Can untimely late career workplace departures be prevented? A quantitative evaluation of a model of involuntary retirement among publicly-employed Registered Nurses and allied health professionals**

S. Hewko<sup>\*a</sup> (Dr), T. Reay<sup>b</sup> (Dr), C. Estabrooks<sup>c</sup> (Dr), G. Cummings<sup>c</sup> (Dr)

<sup>a</sup> University of Prince Edward Island, Charlottetown, CANADA ; <sup>b</sup> Alberta School of Business, Edmonton, CANADA ; <sup>c</sup> University of Alberta, Edmonton, CANADA

\* shewko@upei.ca

Despite existing and predicted shortages of health professionals, we know little about involuntary exits from the workforce among Registered Nurses (RNs) and allied health professionals (AHPs). In this study, using data from the Canadian Longitudinal Study on Aging (CSLA), we have conducted logistic regression to test a conceptual model of involuntary retirement among publicly-employed RNs and AHPs (n = 277). The rate of involuntary retirement among sampled RNs is equivalent to that in the broader Canadian population (23%); only 7% of sampled AHPs retired involuntarily. The tested model “fit,” but explained very little (8%) of the variance in voluntariness of retirement. This was not unexpected considering the limited number of factors identified as contributing to involuntary retirement during development and validation of the model. RNs were significantly more likely to have retired involuntarily than AHPs. Poorer self-rated general (global) health was predictive of increased risk of involuntary retirement. A deeper understanding of involuntary retirement among RNs and AHPs could be gained through collection and analysis of data collected explicitly for that purpose. As self-assessed general health was the only individual significant factor (apart from occupation) associated with involuntary retirement, health care administrators seeking to lower rates of involuntary retirement may see improvement following development, testing and implementation of workplace interventions associated with improvements in self-rated health.



## The influence of chronic diseases on exit from paid employment: a longitudinal study with 6 years follow-up among older workers

K. Oude Hengel<sup>\*a</sup> (Dr), S. Robroek<sup>a</sup> (Dr), I. Eekhout<sup>b</sup> (Dr), A. Van Der Beek<sup>c</sup> (Prof), A. Burdorf<sup>a</sup> (Prof)

<sup>a</sup> Erasmus University Medical Center, Department of Public Health, Rotterdam, NETHERLANDS ; <sup>b</sup> Netherlands Organisation for Applied Scientific Research TNO, Leiden, NETHERLANDS ; <sup>c</sup> Department of Public and Occupational Health, Amsterdam Public Health research institute, VU University Medical Center, Amsterdam, NETHERLANDS

\* k.oudehengel@erasmusmc.nl

### Introduction

As the ageing workforce has major economic implications for society, workers need to remain in productive and sustained employment. To achieve this, understanding the exit routes from employment is crucial. Even though various individual interventions on health were implemented in the past decades, workers with a poor health are more likely to transit from employment into disability benefits, unemployment or early retirement than healthy workers. Although the empirical evidence for this health selection mechanism has been established, the urgent question remains if this mechanism is similar across different specific chronic diseases.

### Methods

A longitudinal analysis was performed among 9,578 Dutch workers aged 45-64 years participating in the Study on Transitions in Employment, Ability and Motivation (STREAM) annual data on chronic diseases, health status and demographics from 2010-2016. STREAM data were enriched by Statistics Netherlands with monthly information on employment status, based on the main income components, social benefit pensions and gross wages over this period. The effect of having a chronic disease on the exit from paid employment during the 6 years follow-up period were analysed using competing risks regression analyses based on Fine and Gray's proportional subhazard models estimating subhazard ratios (SHR).

### Results

Of the 9,578 respondents, 54.5% reported a chronic disease. In total, 34.2% of the study population left the workforce during the 6-year follow-up period because of early retirement (15.6%), unemployment (11.8%), disability benefits (3.5%), or becoming economically inactive (3.3%). Results showed that having a chronic disease was a risk factor for disability benefits (SHR; 6.70, 95%CI 4.76 - 9.48) but no statistical significant relation with the other exit routes of paid employment. Specifically, musculoskeletal and psychological health problems showed the highest risks to leave paid employment through disability benefits (SHR; 3.15, 95%CI 2.50 - 3.96 and SHR: 3.90, 95%CI 2.88; 5.30, respectively). Psychological health problems were also associated with a higher risk to leave paid employment through unemployment (SHR; 1.62, 95%CI 1.29 - 2.04).

### Discussion

As expected, workers with a chronic disease are at higher risk to leave paid employment through disability benefits. However, chronic diseases did not play a significant role in any of the other exit routes, except the higher risk of becoming unemployed for workers with psychological health problems. Before developing interventions for this group of vulnerable workers regarding sustained employment, the next step is to gain insight into modifiable risk factors to enhance sustained employment.

## **The prevalence, seriousness and causes of teenage workers' injuries: the case of Iceland**

M. Einarsdóttir\*<sup>a</sup> (Dr), GL. Rafnsdóttir<sup>a</sup> (Prof)

<sup>a</sup> University of Iceland, Reykjavík, ICELAND

\* margrei@hi.is

Teenagers in affluent societies commonly undertake paid work in tandem with their education.<sup>1)</sup> Research show that young workers, defined as those under 25 are up to twice as likely to suffer work injuries as older workers.<sup>2)</sup> Heterogeneous groups of young workers are, however, to be found within that wider definition of 'young', including the youngest group of workers, those still in their teens and usually in full-time education.<sup>3)</sup> More information is needed on the characteristics of work injuries suffered by that group.

The aim of this study is to provide new information on the causes, prevalence and seriousness of teenagers' work injuries. A self-reported survey was carried out using a random sample of 2800 Icelandic teenagers, aged 13-19, drawn from the Registers Iceland. The data was collected in the early months of 2018. The response rate was 48.6%. Iceland is one of the five Nordic Countries, but these countries are known for their strong OSH policy.

The results show that 16.5% of the young workers had suffered work injuries, and that 7.4% of the accidents led to an absence from work of more than one week. The older teenagers were more likely to have suffered work injuries than the younger ones, but age difference in terms of the seriousness of the injuries was not significant. Gender differences were not significant regarding either the prevalence or the seriousness of the injuries. Cuts and scalds were the most common types of injuries, but sprains and bone fractures the most serious ones. They are also the ones that led to long-term complications. Those serious injuries were most commonly caused by a fall or a slippery surface, causes that can easily be prevented. We argue that the prevalence of accidents among teenage workers can and must be reduced, and serious injuries prevented.

1. Einarsdóttir M. Paid Work of Children and Teenagers in Iceland: Participation and protection. Unpublished doctoral thesis, University of Iceland: Faculty of Social and Human Sciences; 2014.

2. Salminen S. Have young workers more injuries than older ones? An international literature review. *Journal of Safety Research*. 2004; 35:513-21.

3. Nielsen ML, Dyreborg J, Kines P, Nielsen KJ, Rasmussen K. Exploring and expanding the category of 'young workers' according to situated ways of doing risk and safety-a case study in the retail industry. *Nordic Journal of Working Life Studies*. 2013; 3:219-43.

## **Do I tell my supervisor? Self-disclosure at work in employees with migraine and its relationship with work adjustments.**

M. Van Der Doef<sup>\*\*a</sup> (Dr), K. Van Der Hiele<sup>a</sup> (Dr)

<sup>a</sup> Health, Medical, and Neuropsychology, Leiden University, Leiden, NETHERLANDS

\* doef@fsw.leidenuniv.nl

**Aims & background:** Employees with chronic diseases do not always disclose their health condition to their supervisor and colleagues (Munir et al., 2005). The current study examines factors that are predictive of self-disclosure with a specific focus on experienced stigma and perceived social support from supervisor and colleagues in employees with migraine. We expect non-disclosure to be associated with higher experienced stigma and less social support at work. Furthermore, it is examined whether self-disclosure is a prerequisite for work adjustments, and non-disclosure might hinder work adjustments for this group of employees.

**Method:** An online self-report questionnaire, including the Migraine Disability Assessment (MIDAS), the 8-item version of the Stigma Scale for Chronic Illness (SSCI), items on self-disclosure (based on Munir et al., 2005), social support from supervisor and colleagues (Leiden Quality of Work Questionnaire, Maes et al., 1993), and work adjustments (in the past, and required) were completed by 261 employees with migraine. Logistic regression analyses were conducted to test the hypotheses.

**Results:** About one fifth of the sample did not disclose their migraine to their supervisor. Significant predictors of non-disclosure were: being younger, experiencing less symptoms during a migraine attack, less days with headache in the previous 90 days, lower experienced stigma, and lower social support from supervisor.

With one single exception, only employees who did disclose to their supervisor report that work adjustments had taken place; most frequently adjustments related to work hours. Nearly 40% of the sample indicates that further work adjustments are required. This percentage is somewhat higher in employees who did disclose than in employees who did not disclose to their supervisor (42% vs. 28%,  $p < .10$ ).

**Conclusion:** Contrary to expectations, higher experienced stigma regarding the condition migraine was not a factor in non-disclosure at work. A lower experienced level of social support from the supervisor, however, appears to hamper self-disclosure. As self-disclosure seems to pave the way for work adjustments, it is important to provide employees with migraine with support in the process of self-disclosure at work. Especially in a situation with low supervisor support, involving a third party, e.g. an occupational health physician, might be important to facilitate disclosure and create opportunities for work adjustments.

## **A evolution in the PRAP training for a construction of an ergonomics culture: the ergoKaizen in MAGNA GETRAG- FORD Transmissions**

H. Jakubiec<sup>\*a</sup> (Dr), B. Guionie<sup>a</sup> (Mr)

<sup>a</sup> MAGNA GETRAG-FORD Transmissions GmbH, Blanquefort, FRANCE

\* Henriette.Jakubiec@magna.com

In order to prevent the risks linked to the physical activities, INRS proposes an approach based on the empowerment of the most skilled persons on the workstation: the operators. This method is known in France as PRAP training session.

In our Bordeaux plant (1100 workers in the manufacturing automotive sector) we choosed to use and spread the method to build up a real ergonomics culture.

During 3 days, we mix colleagues of different productive and support departments. After a short introduction of some major ergonomics concepts as the prescribed vs real work, the discovering of the different sides of a working situation, we dig in a sensitive working activity proposed by the attendees. Most of the times, this uncomfortable working situation is neglected, either unknown by the management.

Between theory and shop floor life, we test and improve our new ergonomics knowleges and work in partnership with the different departments of the plant. The focus aim is always to share and have opportunities to implement the most appropriate solutions issued of the experts. For example, build up a full scale simulator made of cardboard is a intuitive approach for workers, easy to modify, and helps us to have a better understanding of the issues, and immediatly reachable improvements. Several ways of solving issues are proposed, and a balance between advantges and inconveniences is weighted.

Very often the propositions of the workers are simple and obviously efficient. During these 3 days, as a team we measure, cut, screw... and use the skills of our internal welders. Sometimes it is more simply an unfit organisation to readapt. These simple and cheap improvements are well adopted by the workers and their colleagues: they have been build for them and by them. If the adopted solution is more complex, and requires deeper technical expertise, an action plan report is raised with precise due-dates and leaders, with the involvement of the members of the H&S committee

Beyond the improvements of the real working situations, the target is to build up an ergonomics common culture. Hard working conditions can be not beared anymore. Each one becomes a major actor of changes for him and the plant. And each one discovers that he is not alone in front of a difficulty. He knows that his issues can be shared with the management, the occuptionnal health practitionner and nurses, the safety department, H&S committee, other PRAP attendees... and also that everyone deciding to act can create and participate to an effective and creative environment in ergonomics. Many examples can illustrate this approach.

This strategy is effective and efficient if the management at the higher position, commits with the mindset to empower all workers and management, in a top down and bottom up communication based on a trusty relationship. All subjects could be raised, ergonomics but also safety, production (and others...).

This approach permits us to improve ergonomics, wellbeing, safety, and finally productivity, quality and costs by a similar approach. All the partners are winners !

## The effects of tailored workplace interventions to reduce sitting – a quasi-experimental pilot study

K. Proper\*<sup>a</sup> (Dr), J. Shreij<sup>a</sup> (Mr), E. Zantinge<sup>a</sup> (Dr)

<sup>a</sup> National Institute for Public Health and the Environment, Bilthoven, NETHERLANDS

\* karin.proper@rivm.nl

### Background and aim:

A sedentary lifestyle containing too much and prolonged sitting appears to have negative health effects. Workplace sitting accounts for a big proportion of our sedentary time. The working place offers thus a good setting to implement interventions to reduce sitting among workers. To make a workplace intervention as effective as possible, it is important that workplace interventions match the needs of the employees. This study aimed to evaluate the effect of tailored, single- and multi-component interventions at the workplace on reducing sitting time.

### Methods:

Forty office workers participated in this pilot study. The design was a cluster-quasi-randomized study with three conditions: 1) single-component intervention, 2) multi-component intervention, and 3) control condition. Based on the needs assessment which consisted of interviews among employees, the interventions were designed. The single-component intervention consisted of an environmental intervention: sit-stand workstations. The multi-component intervention also consisted of adding sit-stand workstations to the workplace, as well as an individual and organizational component aimed to reduce sitting. The individual component consisted of 1) a behavioral change strategy using goal setting and 2) a wearable activity tracker to daily monitor their activity and providing feedback to the user. The organizational component consisted of support from the managers to sit less and be more active during the working day. The intervention period was 4-6 weeks. Measurements took place at baseline (before the intervention) and after the intervention. Sitting time was measured objectively by an activPAL activity tracker and subjectively by the validated SQUASH-questionnaire.

### Results:

There were no differences at baseline in either objectively or subjectively sitting time during a workday between the three study groups. Based on the activPAL data, the repeated measures ANOVA revealed a significant main-effect of time ( $p=0.016$ ), but no significant main-effect of condition. Overall, sitting time reduced from baseline to follow-up. There was a significant interaction effect of condition and time ( $p=0.015$ ). Paired-samples t-tests showed a significant reduction in sitting time in the single-component intervention group (from 18.1 (SD 1.6) to 16.9 (SD 1.7) hours/workday), but not in the control and multi-component intervention group. Based on the questionnaire data, there was neither a significant effect over time nor differences between the conditions.

### Conclusion:

The results showed a within-group effect of the sit-stand workstations only on reduced sitting time on a workday after 4-6 weeks of intervention. However, the tailor-made single- or multi-component interventions were not effective on reducing sitting on a workday compared to the control condition. Explanations for the inconsistent results between this study and earlier studies may be due to the study design, including the outcome under measure. Future analyses to the effect on sitting time during working hours (instead of sitting time during a whole workday) are planned and may yield other results. Further, to combat the growing trend of workplace sitting, more research with larger study samples and longer intervention periods is needed on workplace interventions to reduce sitting time among workers.

## **Effect of upright sitting postures on users' physical and mental conditions within different work domains**

M. Nybacka<sup>a</sup> (Ms), AL. Osvalder<sup>\*b</sup> (Prof), B. Van Der Doelen<sup>c</sup> (Mr)

<sup>a</sup> Chalmers University of Technology, Göteborg, SWEDEN ; <sup>b</sup> Chalmers University of Technology, Gothenburg, SWEDEN ; <sup>c</sup> Flokk, Zwolle, NETHERLANDS

\* alos@chalmers.se

We all sit in different ways and postures, in various types of chairs, and time intervals during work. But what is ergonomically sustainable regarding sitting behaviour for people to stay physically and mentally alert for as long as possible during a working life? Can our sitting position affect our alertness, level of stress and/or level of confidence in any way? Are there connections between how we sit and how well we perform at work? These are questions that are of great interest both for seat manufacturers and businesses.

The purpose of this study was to examine what kind of studies that has been made on upright sitting postures and its effects on health and performance within different work domains, such as office work, vehicle driving and control room work. The aim was to get a deeper understanding on what people perceive as upright sitting postures, how these are achieved and in what way they affect the users. The study is mainly based on a thorough scientific literature study, but also written newspaper articles, text books and lectures that include topics such as ergonomics, stress, performance, confidence in relation to sitting have been used as data sources.

The first part of the result deals with the definitions of what an upright sitting posture is, as well as how an ergonomically ultimate sitting posture is defined. The study also establishes how people in real working life (such as office work, vehicle driving, control room operations and learning at school) position themselves in various types of office chairs and vehicle seats (car, truck, bus, train, airplane). Furthermore, the study also describes how people with for example various anthropometric measures, age and BMI achieve an upright sitting posture.

The second part of the result explores the factors that enhance users to sit upright and investigates if people sit differently in different chairs as well as when, how and why people make changes in their sitting postures, and when they maintain an upright posture.

The third part of the results probed if and how the duration of an upright posture affects the users' physical and mental conditions. For the physical conditions the underlying mechanisms that influenced the choice of sitting postures were muscle activity, skin pressure, blood flow and breathing. For the mental conditions connections were found between user's alertness, level of stress, level of confidence in relation to upright postures.

To summarize the sitting posture is depending on a number of parameters at the time, such as the users' individual measures, type of work tasks, type of chair and its adjustment possibilities as well as on the user's physical and mental conditions. Using an upright posture can have positive effects on alertness, confidence and performance.



## Changes in job security and mental health: An analysis of 14 annual waves of an Australian working population panel survey

AD. Lamontagne\*<sup>a</sup> (Prof), T. Too<sup>a</sup> (Dr), L. Punnett<sup>b</sup> (Prof), A. Milner<sup>c</sup> (Dr)

<sup>a</sup> Deakin University, Burwood, Vic, AUSTRALIA ; <sup>b</sup> University of Massachusetts, Lowell, Ma, UNITED STATES ; <sup>c</sup> University of Melbourne, Melbourne, Vic, AUSTRALIA

\* tony.lamontagne@deakin.edu.au

**Background:** There is increasing recognition of job insecurity as an emerging issue in public health. We sought to examine whether job security improvements were associated with improvements in mental health in a large, repeated-measures panel study.

**Methods:** We used both within-person fixed effects (FE) and random effects (RE) regression to analyse data from 14 annual waves of a national Australian survey (19,169 persons, 106,942 observations). Mental Health Inventory-5 scores (outcome) were modeled in relation to self-reported job security (categorical, quintiles), adjusting for age, year, education, and job change in the past year.

**Results:** Both FE and RE models showed stepwise improvements in MHI-5 scores with improving job security, with stronger exposure-outcome relationships in the RE models, and for men compared to women. All models showed roughly monotonic improvements in mental health score by quintile of improvement in job security. The strongest relationship was observed in the RE model for males: for a one-quintile improvement in job security, beta = 2.06 [1.67, 2.46], and the following for two- (3.94 [3.54, 4.34]), three- (5.82 [5.40, 6.24]), and four- (7.18 [6.71, 7.64]) quintile improvements. The FE model for males produced slightly smaller coefficients, reaching a maximum of 5.55 [5.06, 6.05] for a four-quintile improvement.

**Conclusions:** This large study showed a strong dose-response relationship between job security and depression and anxiety symptoms; improved causal inference over previous research is supported by the dose-response finding and the relative consistency of the FE and RE results. Policy and practice intervention to improve job security could benefit population health.

## Work intensification and autonomy in the digitized working world - A challenge for the well-being of employees?

SC. Meyer<sup>\*a</sup> (Dr), A. Tisch<sup>a</sup> (Dr), L. Hünefeld<sup>a</sup> (Dr)

<sup>a</sup> Federal Institute for Occupational Safety and Health, Dortmund, GERMANY

\* Meyer.Sophie-Charlotte@baua.bund.de

**Background:** In recent decades, phenomena such as globalisation, digitalisation and demographic change have dramatically affected the world of work. Yet, it remains unclear whether and to what extent changes in job design can be directly ascribed to digitalisation and whether or not it involves (new) challenges regarding the work and health situation of employees. Digitalisation comprises new possibilities (e.g. broad dissemination of new technologies, intelligent automation, big data or communicative networking) that evoke, enable and reinforce changes as regards new business models, organisational structures or operational processes. With respect to the specific work situation of employees, previous studies document both, a shift of responsibility to the individual as well as a higher level of perceived work intensity, which might be both interpreted as stressors and thus also as a potential health risk [1]. Moreover, previous research has shown that employees affected by digitalisation experience a higher level work autonomy [2], which is in turn positively associated with well-being [3]. Against this background, the objective of our study is to examine how the introduction of new technologies is related to individual work intensity and autonomy. Further, we examine whether and to what extent the empirically well-documented relationship between these working conditions and the employees' well-being is moderated by the introduction of new technologies.

**Methods:** Data refer to the BIBB/BAuA employment survey 2006, 2012 and 2018, a representative cross-sectional survey covering approximately 20,000 employed individuals in Germany in each wave. To measure the introduction of new technologies, participants were asked whether (a) new production or process technologies and (b) new computer programs (new versions of existing programs were explicitly excluded) have been introduced in their immediate working environment within the last two years. In order to measure the well-being of employees, job satisfaction and the number of psychosomatic complaints are considered in the analyses.

**Results:** Regression analyses indicate that the introduction of new technologies is associated with increased work intensity. With regard to work autonomy, there are differences according to the type of newly introduced technology. While the introduction of new computer programs is associated with an increased autonomy for employees, newly introduced production or process technologies tend to be associated with less autonomy. With regard to the well-being of employees, the analyses reveal that the introduction of new computer programs partially moderates the association between working conditions and job satisfaction or psychosomatic complaints, respectively. The introduction of new computer programs slightly buffers the relationship between work intensification and job dissatisfaction. Furthermore, the positive association between autonomy and the number of psychosomatic complaints is supported by the introduction of new computer programs.

**Conclusion:** In sum, the results indicate that digitalisation is associated with both, opportunities and risks for the work situation and the well-being of employees. Employers should support their employees during the process of introducing new technologies in order to reduce work intensification and to use the positive aspects of new technologies for designing healthy work environments.

1. Korunka, C. & Kubicek, B. (2017). *Job Demands in a Changing World of Work: Impact on Workers' Health and Performance and Implications for Research and Practice*. Springer: Cham.
2. Kirchner, S. (2015). *The Contours of Digital Workplaces. Predictors of ICT usage and the impact on job quality*. [German: Konturen der digitalen Arbeitswelt. Eine Untersuchung der Einflussfaktoren beruflicher Computer- und Internetnutzung und der Zusammenhänge zu Arbeitsqualität]. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 67(4), 763-791.
3. Lohmann-Haislah, A. (2012). *Stressreport Deutschland 2012. Psychische Anforderungen, Ressourcen und Befinden*. BAuA: Berlin.

## Which factors are associated with entrepreneurial wellbeing? A systematic qualitative review

S. Ahola<sup>\*a</sup> (Dr), JP. Mäkiniemi<sup>a</sup> (Dr), S. Nuutinen<sup>a</sup> (Mrs), K. Heikkilä-Tammi<sup>a</sup> (Dr), J. Laitinen<sup>b</sup> (Dr), T. Oksanen<sup>c</sup> (Dr)

<sup>a</sup> University of Tampere, Tampere, FINLAND ; <sup>b</sup> Finnish Institute of Occupational Health, Oulu, FINLAND ; <sup>c</sup> Finnish Institute of Occupational Health, Turku, FINLAND

\* salla.ahola@gmail.com

### Introduction

Entrepreneurs are generally more satisfied with their work compared to employees (Benz & Frey, 2008). However, entrepreneurs' work is characterised by many demands (Dijkhuizen et al., 2016). Thus far, there is only limited knowledge on the factors that may be relevant for entrepreneurs' wellbeing at work. Therefore, the aim of our systematic qualitative literature review is to find out which factors predict wellbeing at work among entrepreneurs.

### Data collection

The procedure for the information search was planned together with university library information specialists, and these information specialists conducted the search in January 2018. We selected seven electronic databases covering research in health, wellbeing, and entrepreneurship, such as Medline, PsycINFO and Ebscohost Business Source Elite. The search included terms related to the target group (e.g. entrepreneur) and wellbeing (e.g. work engagement, burnout, job satisfaction). The search that targeted articles written in English and published in peer-reviewed scientific journals, yielded altogether 1870 articles (after removing the duplicates).

### Data analysis

First, we screened the articles based on their title and abstract, after which we read the full texts of those articles that passed the criteria for inclusion. After several rounds of screening, we specified further the inclusion criteria, and identified as the most relevant inclusion criterion that the article answers to the question "which factors predict entrepreneurs' wellbeing at work?" Another relevant inclusion criterion was that the empirical analysis conducted in the article was at least at the level of regression analysis, in which an experience of wellbeing at work was explained by some effective factors. There were approximately 50 such articles. We did not include qualitative studies in this review.

### Results

The included studies were typically cross-sectional by their research design. However, there were also some longitudinal studies. The most commonly studied concepts of wellbeing at work were job satisfaction, burnout, and stress. We conducted the analysis of the factors that predict entrepreneurial wellbeing separately for each of the concepts of wellbeing at work. The preliminary results indicate, for example, that the factors predicting burnout were related to social relationships at work, working conditions, individual factors, balancing entrepreneurship and other spheres of life, and the business itself.

### Discussion

The key predictors of entrepreneurial wellbeing included different types of workplace resources and demands. The main types were 1. individual factors (e.g. psychological capital), 2. social factors (e.g. occupational loneliness, work-family conflict), 3. job conditions (e.g. role ambiguity) and 4. factors related to running a company (e.g. business competition).

In many studies, the respondents had not been selected randomly, which somewhat limits the generalisability of the findings. A further limiting factor is the variety of measurement instruments used to measure a specific concept of wellbeing at work. It is important that future research further investigates the factors that contribute to entrepreneurial wellbeing and tests these associations with preferably other than cross-sectional designs.

1. Benz, M., & Frey, B. S. (2008). The value of doing what you like: Evidence from the self-employed in 23 countries. *Journal of Economic Behavior & Organization*, 68(3-4), 445-455.

2. Dijkhuizen, J., Gorgievski, M., van Veldhoven, M., & Schalk, R. (2016). Feeling successful as an entrepreneur: a job demands—resources approach. *International Entrepreneurship and Management Journal*, 12(2), 555-573.

## **The role of employee self-efficacy in top-down burnout contagion: A multilevel longitudinal study**

A. Parent-Lamarche\*<sup>a</sup> (Prof), C. Fernet<sup>a</sup> (Prof)

<sup>a</sup> Université du Québec à Trois-Rivières, Trois-Rivières, CANADA

\* Annick.Parent-lamarche@uqtr.ca

**Background:** Burnout has been a prominent topic in the management research for over thirty years. Not only is burnout an increasingly acute problem for individual workers, it also has consequences for the organization as a whole. The majority of theoretical studies to date conceive of burnout as an end state at the individual level. Meanwhile, researchers have long suspected that burnout is contagious. Yet few studies have explored the conditions that foster the spread of burnout from managers to employees. To date, there is little evidence to explain the factors that could facilitate this contagion.

**Objective:** In order to extend this understanding, we focus on the effect of top-down burnout contagion from manager to employee. Based on the principle of behavioral plasticity, we propose that self-efficacy is an adaptive resource that enables employees to counter the potentially contagious effects of burnout (i.e., emotional exhaustion and cynicism). First, we postulate that when employee burnout and work overload at baseline are controlled for, managerial burnout positively predicts employee burnout over time. Second, we postulate that employee self-efficacy would moderate the top-down burnout contagion effect (from manager to employee).

**Method:** We collected data at two times (October and June; T1 and T2, respectively) within an eight-month period in order to cover an entire school year. Participants were recruited voluntarily from various elementary and high schools in the province of Québec, Canada. We used a multilevel longitudinal design that accounts for the hierarchical data structure, with teachers (n=102) nested within organizations and managers (n=84). We estimated the model parameters using restricted iterative generalized least-squares (RIGLS) estimation in MLwiN 2.31.

**Results:** Managerial burnout at T1 did not significantly predict employee burnout at T2. A moderating effect of employee self-efficacy was found, but only for emotional exhaustion, which is considered the basic individual stress dimension of burnout. More specifically, managerial emotional exhaustion was associated with lower emotional exhaustion over time in employees who reported higher self-efficacy, with the inverse association for employees who reported lower self-efficacy.

**Conclusion:** Our results provide the first empirical evidence that a top-down contagion process operates over and above work overload. This suggests that managers' emotional exhaustion can "infect" the emotional state of their subordinates. In addition, a key contribution of this study lies in the introduction of self-efficacy as a moderator of manager-to-employee contagion. Hence, this study provides meaningful insights into ways to prevent burnout contagion from manager to employee, and particularly by fostering employee self-efficacy. Therefore, ways should be found to strengthen self-efficacy in employees. For example, interventions could target recognized sources of self-efficacy beliefs, including enactive mastery experience, vicarious experience, social persuasion, and physiological and affective state. These approaches could boost employee self-efficacy and help offset the potentially contagious effect of burnout in managers and peers alike.

1. Bakker, A. B., & Schaufeli, W. B. (2000). Burnout contagion processes among teachers. *Journal of Applied Social Psychology*, 30: 2289-2308.
2. Bakker, A. B., Westman, M., & Hetty van Emmerik, I. J. 2009a. Advancements in crossover theory. *Journal of Managerial Psychology*, 24: 206-219.
3. Huang, J., Wang, Y., Wu, G., & You, X. 2016. Crossover of burnout from leaders to followers: a longitudinal study. *European Journal of Work and Organizational Psychology*, 25: 849-861.

## The determinants of work withdrawal: the case of cynicism

W. Merkouche<sup>\*a</sup> (Ms), A. Marchand<sup>a</sup> (Prof), S. Renaud<sup>a</sup> (Prof)

<sup>a</sup> Université de Montréal, Montréal, CANADA

\* wassila.merkouche@umontreal.ca

Work withdrawal (WW) is a component of organizational withdrawal (OW) which is a set of negative counterproductive behaviours aiming to damage the organization, according to the principle of reciprocity and social exchange (Hanish & Hulin, 1995), allowing the employee to leave his job or avoid his assigned work. WW is the fact of being distant from his work tasks by opting for delays, absenteeism and other adverse behaviors. The adoption of WW has organizational negative effects like the decrease of performance, and also individual negative effects like the loss of income in case of lateness or absenteeism. We use the systemic micro, meso and macro sociological approach designing the individual at the heart of a system containing individual, organizational, and environmental determinants. Under the influence of these different factors, the individual assesses the type of behavior to adopt. For the current study we focus on the individual and organizational levels. We provide better lighting for understanding WW using psychological contract approach (Rousseau, 1995, 2000) through the perception of respect of promises by the organization which explains why the unsatisfied employee maintains his job relationship while practicing negative behaviors such as cynicism. Cynicism is the attitudinal aspect of burnout (Maslach, 1981, 1986, 1996). We describe an empirical study about the influence of evaluating psychological contract in the employment relationship on cynicism. Our estimate is quantitative with secondary transversal data. We study some determinants of cynicism among a sample of 2162 employees in 63 establishments in Quebec (Canada). We analyze these cross-sectional data by a multilevel model using the Stata software where employees are nestled in institutions to see the differences in the presence of cynicism across groups. We study particularly the relationship between work organization conditions such as skill utilization, decision-making latitude, career development opportunities and job insecurity on the one hand, and the possibility of developing cynicism, on the other hand. We suppose that these four variables affect directly cynicism. We present the result of multiple and multilevel regression that indicates that the formulated hypothesis is completely verified.

Key words: Cynicism -Organizational Withdrawal-Psychological Contract

1. Coyle Shapiro, J. A.-M., Shore, L.M., Taylor, M. S. and Tetrick, L. E. (2004). The employment relationship: examining psychological and contextual perspectives. Oxford, UK, Oxford University Press 2004
2. Hanisch, K. A., & Hulin, C. L. (1990). Job Attitudes and Organizational Withdrawal: An Examination of Retirement and Other Voluntary Withdrawal Behaviors. *Journal of Vocational Behavior*, 37(1), 60-78.
3. Marchand, A., Durand, P., & Demers, A. (2006). Un Modèle Multiniveaux des Déterminants de la Santé Mentale Dans la Main-D'œuvre. *Canadian Journal of Community Mental Health*, 25(2), 11-30.

## **Burnout prevalence and risk factors among Belgian workers estimated by general and occupational physicians**

L. Braeckman\*<sup>a</sup> (Prof), L. D'Hulster<sup>a</sup> (Mr), M. Jemine<sup>b</sup> (Ms), P. Firket<sup>c</sup> (Prof), D. Rusu<sup>b</sup> (Prof), I. Hansez<sup>c</sup> (Prof)

<sup>a</sup> Ghent University, Gent, BELGIUM ; <sup>b</sup> Université de Liège, Liège, BELGIUM ; <sup>c</sup> Université de Liège, Liège, BELGIUM

\* lutgart.braeckman@ugent.be

### **Background**

During the last decade, burnout is recognized as an important health issue because of its considerable social and economic costs. Due to the variation in definitions and in measurement instruments using self-report scales, prevalence of burnout in the working population ranges from 2% to more than 40%.

### **Methods**

Based on literature and focus group meetings, we developed a screening form for estimating the prevalence of burnout in the Belgian active population by relying on the clinical judgment of general and occupational physicians. In 2010 this screening form was prospectively used by 346 physicians during a three months period and resulted in a burnout prevalence estimate of 0,8% (1089 cases out of 135.131 clinical contacts). Recently, the screening form was updated and a second survey took place in the spring of 2018.

### **Results:**

During this second data collection period of 3 months, 126 physicians established 36.187 worker contacts and identified 507 burnout cases: prevalence is thus estimated at 1.4 %. In 2010 and 2018, stress and exhaustion were the most reported complaints together with sleep problems and loss of energy. Work pressure and conflict at work were negatively associated with burnout while social support and acknowledgement had a positive influence. No gender difference was observed.

### **Discussion:**

For several diseases, an important difference is observed between the rate of complaints and the actual recourse to medical care. Although the prevalence of burnout estimated through the health care system increased in the second study, it is still largely lower than the rate derived from individual self-evaluations. A burnout screening form may help health professionals in identifying workers suffering from stress and burnout at work, thus opening perspectives for primary and secondary prevention strategies.



## **Prevalence and characteristics associated with multiple problems among work disability benefit recipients**

K. Brongers\*<sup>a</sup> (Mr), B. Cornelius<sup>a</sup> (Dr), T. Hoekstra<sup>a</sup> (Dr), S. Brouwer<sup>a</sup> (Prof)

<sup>a</sup> University of Groningen, University Medical Center Groningen, Groningen, NETHERLANDS

\* k.a.brongers@umcg.nl

**Objectives** Disability benefit recipients face participation problems related to functional impairments due to ill-health. Many of them have additional problems, that may reinforce disability and ill-health, hampering social inclusion and work participation. The aim of this study is to examine the prevalence, type and combinations of multiple problems in a group of participants on work disability benefit. Furthermore, we aimed to study the associations between multiple problems and age, gender, education level, living status, diagnosis and work status. **Methods** This study is a cross-sectional analysis of disability beneficiaries in the Netherlands. Participants with remaining work capacity were recruited by labour experts from the Dutch Social Security Institute: the Institute for Employee Benefits Schemes (UWV). Data on diagnosed disorders were retrieved from UWV register data. With a questionnaire we collected data on socio demographics, the presence (yes/no) and experienced severity (none/mild/moderate/severe) of ten problems that may hinder the participant in daily participation, i.e. physical ill-health, mental ill-health, financial problems, care for family, a too low or not suitable educational level, problems with the Dutch language, contact with police, problems with housing, addiction and domestic violence. **Results** The sample consisted of 208 participants, 95 male (45.5%) with a mean age of 35.7 years (SD 13.0). One third (33.3%) was low educated, 34.8 % lived alone and 16.7% was working. The majority of the participants were primary diagnosed with a psychiatric or developmental disorder (51.2%), followed by somatic diseases (35.6%) and intellectual disabilities (13.2%). Within our sample, 86% of the participants experience multiple problems MP. The mean number of experienced problems was 3.3 (SD 1.7). The majority of the participants experienced problems with physical health (75.8%) or mental health (75.5%), often combined with problems with educational level (55.4%) or financial problems (about 48%). Multiple regression analyses show associations of female gender ( $B=0.520$ , 95%CI= 0.069 to 0.971) and low educational level, compared to middle ( $B=-0.751$ , 95%CI=-1.259 to -0.244) and high educational level ( $B=-1.214$ , 95%CI=-1.903 to -0.524), with a higher number of perceived problems. **Conclusion** Among disability benefit recipients, a majority experience multiple problems, with an average of 3.3 problems per individual. Especially combinations of physical and mental health, with an experienced too low or not suitable educational level or financial problems are often reported. Female gender and a low educational level are independently associated with more problems. These results indicate that interventions to improve social participation, including work, should not focus on health only, but also on the additional problems experienced by disability benefit recipients. **Keywords:** disability benefit recipients, multiple problems, social participation, work

## Psychosocial factors and self-reported global health in a longitudinal survey

S. Boini<sup>\*a</sup> (Mrs), M. Grzebyk<sup>a</sup> (Mr), D. Chouaniere<sup>a</sup> (Dr)

<sup>a</sup> INRS, Vandoeuvre, FRANCE

\* stephanie.boini@inrs.fr

### Objectives

This study aimed at highlighting the relationship between change in exposure to a wide variety of psychosocial factors (PSF) and the decline of global health status among 5,500 workers out of the French cohort "Health and Career paths".

### Methods

Global health status was assessed in 2006 & 2010 by one question -"In general, how is your health?" ranked on a 5-point Likert rating scale (very good, good, average, poor and very poor). The outcome considered here was poor self-reported health in 2010, corresponding to subjects who reported average, poor or very poor health status in 2010. In addition, seventeen self-reported PSF were evaluated in 2006 & 2010. They explored six domains: labor intensity and working time (7 items), emotional demand (3 items), autonomy (2 items), social relationships at work (2 items), conflict of values (2 items), and job insecurity (1 item). Each item was ranked on a frequency 4-point Likert rating scale (from never to constantly exposed). A score ranging from 0 to 3 was calculated in 2006 and in 2010 for each sub-domain and subjects were considered as exposed if the score was strictly higher than 1. For each PSF, four groups (A-D) were considered: exposed neither in 2006 nor in 2010 (A as the reference), exposed in 2010 but not in 2006 (B as a short-term effect), exposed in 2006 but not in 2010 (C as a lagged effect), exposed in both 2006 and 2010 (D as a cumulative effect). Multiple logistic models were performed separately in men and women.

### Results

Among the 2250 men and 2420 women without poor health status in 2006, 319 (14%) and 368 (15%) declared a poor health status in 2010. In men, exposure to low use or enhancement of skills or poor social relationships at work was related to poor health status in 2010, whatever the exposure groups. Short-term, cumulative or lagged effects of 5 PSF on poor health status were observed (high volume of work, work family imbalance, tensions with public, lack of reward, job insecurity). Finally, the risk of poor health status in 2010 was lower in the case of the improvement of job control and working hours (group C). In women, poor health status in 2010 was associated with fear at work in both group B and D; with work family imbalance, job insecurity and pressure at work in group B; and with poor social relationship at work and low quality task in group D. Finally, the risk of poor health status in 2010 was weaker in the case of the improvement of reward (group C).

### Conclusions

These results underlined, in the context of a 4-year follow-up, the relationships between several PSF, additional to those of Karasek and Siegrist models, and poor self-reported health status. According to PSF sub-domains and gender, the results suggest short-term, cumulative and lagged effects

## Occupational factors associated with perceived mental and physical health in postal workers

S. Boini<sup>\*a</sup> (Mrs), M. Grzebyk<sup>a</sup> (Mr), M. Dziurla<sup>a</sup> (Mr), A. Radaudeanu<sup>a</sup> (Dr)

<sup>a</sup> INRS, Vandoeuvre, FRANCE

\* stephanie.boini@inrs.fr

### Objectives

The objective of the study was to analyze the effect of driving of a light vehicle for the mail and parcel delivery process on perceived physical and mental health in postal workers taking into account the working conditions (physical strain, work organization and psychosocial factors) and usual individual confounders.

### Methods

The study was carried out in a group of 306 postal workers with exclusive light vehicle driving delivery activity, compared to a group of 100 postal workers with exclusive foot delivery or exclusively sorting activity. Postal workers filled in a self-administrated questionnaire in order to report, at their work situation level, occupational driving if any, physical factors, organizational and psychosocial working conditions, and personal characteristics. Moreover, perceived physical and mental health was measured using the 12-item Short Form health survey (SF12). Items of SF12 have been combined into two summary measures: Physical (PCS) and Mental (MCS) Component Summary Scale. Finally, head managers of postal workers were queried through a self-reported questionnaire on organizational characteristics at the establishment level. Multiple regression models were performed separately in men and women.

### Results

The PSC and MCS mean scores were 49 (9.1) and 47 (7) for the study sample. No significant difference between the groups was evidenced.

In men, PCS was negatively associated with high perceived physical effort during the loading of the vehicle and during the delivery process but positively associated with high perceived physical effort when returning to the mail center. MCS was negatively associated with high frequencies of upper limbs awkward postures while driving. In women, MCS was negatively associated with high perceived physical effort during the initial sorting and planning of the delivery process. The duration of the mail and parcels sorting process was positively associated with PCS.

Psychosocial factors negatively associated with perceived health were: lack of job control (PCS in men), high psychological demand (PCS in women), physical aggression (PCS in women), necessity of hiding or faking emotions (PCS in men; MCS in men and women), necessity of undertaking tasks that the worker disapproves (PCS in men) and the fear of job loss (MCS in women).

Three organizational factors assessed at the establishment level had a direct and negative effect on perceived health: belonging to an establishment without any objective at the individual level (PCS and MCS in men), development of more demanding objectives (PCS in women) and the permanent control of workers either by manager or by computer monitoring (MCS in men). One organizational factor assessed at the individual level had a direct effect on perceived physical health: being affected by new work organizations, especially those without a meridian break was negatively associated with PCS in men.

### Conclusions

Most of the studied factors were risk factors for PSC and MCS. As low perceived physical and mental health can lead to important health events, it's important to promote "healthy" working environments by taking into account the modifiable work factors we evidenced.

## Improving organizational health intervention by integrating process, context, and outcomes

C. Biron\*<sup>a</sup> (Prof)

<sup>a</sup> Université Laval, Quebec, CANADA

\* caroline.biron@fsa.ulaval.ca

There is growing evidence that **implementation context and processes are linked to intervention outcomes**. However, **too little is known about how to collect and analyze data on intervention context and processes and integrate them with outcome / effect evaluation**. This symposium aims to advance progress on these issues by investigating different parts of these complex relations.

The first paper by Karanika-Murray et al is based on extensive research in various organizational settings highlighting the importance of leadership in interventions. Leadership is contextualized in terms of its dynamic role throughout the intervention process. Five core arguments are presented to highlight that intervention leadership 1) should be specific and include programme implementation 2) is not ad hoc but an integral force developed in tandem with the implementation process, 3) should be evidence-based, 4) is a dynamic process, and 5) should also focus on developing leaders' capacities to increase sustainability (Ipsen et al 2018).

The second paper by Biron et al focuses Psychosocial safety climate (PSC-Dollard and Bakker, 2010) as a determinant of implementation in the context of the Quebec Healthy Enterprise Standard. Two studies are presented with data collected in organizations involved in the Standard with over 5000 participants who completed two waves of measurement. Results show PSC influences both employees' exposure to interventions, and the quality of managerial practices. As managers play a crucial role in well-being interventions, the results also suggest they themselves need to be supported in their role (Biron et al. 2018).

The third paper by Jaspers et al aims to integrate context, process and outcome evaluation. This theory driven organizational intervention integrates a behavior and culture based approach to violence prevention in 16 workplaces from two high risk sectors (psychiatry and the prison and probation service). Using mixed methods, the study focusses on an in-depth evaluation of the relation between context and process. Preliminary analyses indicate that resources, existing workplace culture of participation and parallel change processes are the most dominant context factors to influence the implementation of intervention activities and the action plans.

The last paper by Whysall aims to broaden the focus of interventions by considering how factors relating to the strategic and cultural context of organizations can influence interventions to promote diversity and work-related wellbeing. The study was conducted within a large UK-based professional services organization. It aimed to explore to what extent, and how, organizational culture and strategic context may be inhibiting the effectiveness of interventions aiming to enhance diversity and work-related wellbeing. Results from interviews and focus groups with employees across three geographical locations highlight how failure to take sufficient consideration of the changing strategic context can impede the success of such interventions, and generate significant feelings of dissatisfaction and frustration among employees, and ultimately disengagement.

This symposium contributes to knowledge by investigating mechanism that make interventions work and thereby highlighting **why** and **how** interventions succeed or fail. By paying attention to the context and processes by which they are developed, implemented and evaluated, we can get better insight in terms of outcomes obtained.

1. Ipsen, C., Karanika-Murray, M., & Hasson, H. (2018). Intervention leadership: a dynamic role that evolves in tandem with the intervention. *International Journal of Workplace Health Management*, 11(4), 190-192.
2. Dollard, M., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational Health Psychology*, 83(3), 579-599.
3. Biron, C., Parent-Lamarche, A., Ivers, H., & Baril-Gingras, G. (2018 ). Do as you say: The Effects of Psychosocial safety climate on managerial quality in an organizational health intervention. *International Journal of Workplace Health Management*, 11(4), 228-244. doi:<https://doi.org/10.1108/IJWHM-01-2018-0009>

## **Interventions leadership is a dynamic role that evolves with the intervention process: Five arguments for a new approach**

M. Karanika-Murray<sup>\*a</sup> (Dr), C. Ipsen<sup>b</sup> (Dr), H. Hasson<sup>c</sup> (Dr)

<sup>a</sup> Nottingham Trent University, Nottingham, UNITED KINGDOM ; <sup>b</sup> Technical University of Denmark, Copenhagen, DENMARK ; <sup>c</sup> Karolinska Institutet, Stockholm, SWEDEN

\* maria.karanika-murray@ntu.ac.uk

There is consensus that one of the key ingredients for successful organizational health interventions is leadership. However, empirical studies are scarce and there is a general lack of understanding of the mechanisms underlying the role of leadership in interventions. This presentation will build on the concept of intervention leadership to present a conceptualization of it as a dynamic role that evolves in tandem with the intervention process (Ipsen et al. 2018). We will define intervention leadership, position it in the intervention process, and present five core arguments in support of that.

First, leadership should be specific to the domain of interest. This also applies to programme implementation and organizational health interventions. Building on the concept of implementation leadership (Aarons et al. 2014), we define intervention leadership as *the process whereby a leader harnesses and applies resources to influence the intervention participants, support the intervention processes, and achieve the intervention aims*.

Second, intervention leadership is not necessarily about specific behaviors or roles, but it is embedded in the intervention process. Leader influence can be direct, as a role with concomitant responsibilities in the intervention process, indirect, as an influence on employee behaviors and attitudes towards the intervention, or diffused, as a broader systems influence on the intervention implementation. As such, intervention leadership evolves in tandem with the intervention and is an integral part of the intervention system, together with rules, culture, and regulations, which surround successful interventions. Thus, intervention leadership is not an ad-hoc resource but an integral force that developed in tandem with the implementation process.

Third, intervention leadership is evidence-based practice. In evidence-based practice, an understanding of the problem is the starting point, rather than the solution, and research is used to support the decision-making process. In the same way, intervention leadership is about understanding and adjusting to the needs of the intervention.

Fourth, since organizational health interventions are about “improving health by changing the organization of work” (Semmer, 2006), leadership is concerned with structures and processes that undergo a change transformation. Therefore, intervention leadership is inherently a dynamic process. Not only it can be more critical at certain points of the intervention process, but also may have a cumulative effect over time. Intervention leadership is shaped and cultivated by five forces: the leader’s need to sustain support, the leader’s hierarchical position, the organizational context and psychosocial work factors, and upward feedback from employees (Ipsen et al. 2018).

Finally, the intervention can change the leaders themselves. This can be either through the intervention activities focused on changing task characteristics, work conditions, or social aspects, or through the implementation process, which leaders are an integral part of. In either case, the intervention outcomes are longer lasting and more sustainable if intervention leadership qualities are developed with the new organizational system, processes, or structures.

Our intention is to approach intervention leadership as an integral element of organizational health interventions, explore how intervention leadership is interrelated to and evolves in tandem with the intervention, and explore avenues for research and sustainable intervention practice.

1. Aarons, G. A., Ehrhart, M. G., Farahnak, L. R., & Sklar, M. (2014). Aligning leadership across systems and organizations to develop a strategic climate for evidence-based practice implementation. *Annual Review of Public Health*, 35, 255-274.
2. Ipsen, C., Karanika-Murray, M., & Hasson, H. (2018). Intervention leadership: a dynamic role that evolves in tandem with the intervention. *International Journal of Workplace Health Management*, 11(4), 190-192.
3. Semmer, N. K. (2006). Job stress interventions and the organization of work. *Scandinavian journal of work, environment & health*, 515-527.

## Psychosocial safety climate as a determinant of implementation in the Quebec Healthy Enterprise Standard

C. Biron<sup>\*a</sup> (Prof), M. Mondor<sup>b</sup> (Dr), H. Sultan-Taïeb<sup>c</sup> (Prof), C. Brisson<sup>d</sup> (Prof), M. Vézina<sup>e</sup> (Prof), F. St-Hilaire<sup>f</sup> (Prof), MM. Mantha-Bélisle<sup>g</sup> (Ms)

<sup>a</sup> Université Laval, Quebec, CANADA ; <sup>b</sup> Centre de recherche du CHU de Québec, Université Laval, Québec, CANADA ;

<sup>c</sup> Université du Québec à Montréal (UQAM), Montréal, CANADA ; <sup>d</sup> Centre de recherche CHU de Québec, Université Laval, Québec, CANADA ; <sup>e</sup> Institut national de santé publique du Québec (INSPQ), Université Laval, Québec, CANADA ;

<sup>f</sup> Université de Sherbrooke, Sherbrooke, CANADA ;

<sup>g</sup> Institut national de santé publique du Québec (INSPQ), Québec, CANADA

\* caroline.biron@fsa.ulaval.ca

**Introduction:** In Quebec, the “Healthy Enterprise Standard” (HES) is becoming an influential motivator for organizations wanting to improve and structure their preventive efforts. Despite the increasing interest for obtaining a certification or an award for being considered a proactive organization, there is little known regarding the factors influencing the implementation of interventions in the framework of a voluntary standard. Psychosocial safety climate (PSC, Dollard and Bakker 2010) is considered as a facet of organizational climate as it characterizes senior management values and attitudes towards employees’ health. In this study, PSC was considered as a precursor and determinant of intervention exposure. Study 1 aims to evaluate how PSC influences exposure to interventions relating to the four areas of the HES and the effect of this exposure to interventions on psychological distress. Study 2 aims to understand if and how PSC affects managerial practices.

**Methods:** Study 1 includes all active employees of ten Quebec organizations (n=2560) who were solicited to fill in a questionnaire 24-38 months after the beginning of the HES implementation. Employee exposure to interventions on managerial quality was measured using items specifically relating to the four areas of the HES. In study 2, 118 managers completed a two-wave questionnaire during the implementation of the HES.

**Results:** Results of the binomial regression analysis showed a significant positive relationship between PSC and exposure to all types of interventions. PSC increased exposure to interventions related to “Management Practices”, “Healthy life habits”, “Work-life balance”, and finally, to changes in the “Physical environment” (prevalence ratio = 1.70,  $p < .0001$ ). Higher exposure to interventions relating to Management practices was associated with decrease in psychological distress. Study 2 shows that managers’ job control significantly mediates the relationship between PSC and managerial quality (Biron et al. 2018).

**Discussion:** Given that interventions are notoriously difficult to implement, this study offers some insight in its implementation process, showing that PSC is a determinant factor their implementation and for managerial quality. In all areas of the standard, Management practices is the only area that is associated with decreases in psychological distress, thus supporting the relevance of primary prevention practices. However, study 2 highlights that managers need to have some leeway in order to adopt practices that are favorable to their employees’ psychological health. Whereas most intervention research concludes that top management commitment is a crucial factor for the success of the intervention program (e.g. Karanika-Murray and Biron 2015), these results highlight the role of PSC and its effect on perceived exposure to interventions in each area of the standard and the quality of management practices.

1. Dollard, M., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational Health Psychology*, 83(3), 579-599.

2. Biron, C., Parent-Lamarche, A., Ivers, H., & Baril-Gingras, G. (2018 ). Do as you say: The Effects of Psychosocial safety climate on managerial quality in an organizational health intervention. *International Journal of Workplace Health Management*, 11(4), 228-244. doi:<https://doi.org/10.1108/IJWHM-01-2018-0009>

3. Karanika-Murray, M., & Biron, C. (2015). Why do some interventions derail? Deconstructing the elements of organizational interventions for stress and well-being In M. Karanika-Murray & C. Biron (Eds.), *Derailed organizational health and well-being interventions - Confessions of failure, solutions for success* (pp. 1-23). Dordrecht: Springer Science+Business Media.



## How to integrate context, process and outcome evaluation of organizational interventions?

Sø. Jaspers<sup>\*a</sup> (Ms), IL. Karlsen<sup>a</sup> (Ms), DR. Andersen<sup>b</sup> (Ms), PM. Conway<sup>c</sup> (Mr), J. Dyreborg<sup>a</sup> (Mr), LP. Andersen<sup>b</sup> (Mr), B. Aust<sup>a</sup> (Ms)

<sup>a</sup> National Research Center for the Working Environment, København ø, DENMARK ;

<sup>b</sup> Danish Ramazzini Centre, Department of Occupational Medicine – University Research Clinic, Regional Hospital West Jutland, Herning, DENMARK ; <sup>c</sup> Department of Psychology, University of Copenhagen, København, DENMARK

\* soj@nfa.dk

**Keywords:** Context evaluation, implementation process, organizational psychosocial interventions

**Introduction:** Organizational level workplace interventions notoriously show either no or mixed results. Research points at, that this is largely due to a too narrow evaluation that exclusively focusses on effects. For a better understanding of what it is that makes organizational level workplace interventions work or not the integration of context, process and outcome evaluation is widely recommended, however, only few examples of these kind of comprehensive evaluations exist (Abildgaard, Saksvik, & Nielsen, 2016; Fridrich, Jenny, & Bauer, 2015). This study provides an example on how to integrate context, process and outcome evaluation in organisational interventions. We apply this evaluation concept to an ongoing theory driven intervention that integrates a behavior and culture based approach to violence prevention in two high risk sectors (psychiatry and the prison and probation service).

**Methods:** The intervention study uses a stepped wedged design, which means that all 16 participating workplaces successively will receive the intervention. Based on a predefined assessment scheme that is structured around the program theory, the implementation degree is calculated for each of the 16 intervention workplaces. In addition, we collect a variety of process and context data: interviews with managers and employees before and after the intervention and field notes from each intervention activity where we respectively ask for and observe after pre-defined assumptions about the contexts influence on implementation. In addition, we document the action plans developed by management and employee representatives of the intervention departments and additional mail correspondences about e.g. workplace changes that might have an influence on the implementation.

For an in-depth evaluation of the relation between context and process we will use a comparative case study design based on 4 cases: From each sector we select one case with a high implementation degree and one with a low implementation degree.

**Results:** At the present time seven workplaces have participated in the intervention and by March 2019 the last nine workplaces will have finished the intervention. Preliminary analyses indicate that resources, existing workplace culture of participation and parallel change processes are the most dominant context factors to influence the implementation of intervention activities and the action plans. The full material will be available for analysis in March 2019 and preliminary results will be presented on the conference.

**Discussion:** By systematically collecting predefined information about context and implementation process, it becomes possible to analyse how context and implementation are linked. By comparing the influence of context factors on the implementation process in different sectors and in high and low implementation cases, we can assess under which circumstances the intervention is implementable. In our further analysis the implementation degree will be included in the outcome evaluation. This will qualify the outcome evaluation by adding information on how the variation in effects in different workplaces can be explained by implementation degree as well as the differences in change mechanisms and context, thereby contributing to a better understanding what it is that makes these kind of interventions work or not.

1. Abildgaard, J. S., Saksvik, P. Ø., & Nielsen, K. (2016). How to Measure the Intervention Process? An Assessment of Qualitative and Quantitative Approaches to Data Collection in the Process Evaluation of Organizational Interventions. *Frontiers in Psychology*, 7, 1380. <http://doi.org/10.3389/fpsyg.2016.01380>

2. Fridrich, A., Jenny, G. J., & Bauer, G. F. (2015). The context, process, and outcome evaluation model for organisational health interventions. *BioMed research international*, 2015.



## **Exploring the cultural and strategic organisational context of diversity interventions: The black box between discourse and reality**

Z. Whysall\*<sup>a</sup> (Dr)

<sup>a</sup> Nottingham Trent University, Nottingham, UNITED KINGDOM

\* zara.whysall@ntu.ac.uk

Despite the documented benefits of workplace diversity, progress towards achieving it has been slow. Alongside this, there is growing realisation that the potential barriers to diversity in today's organisations are largely implicit, and deep-rooted, and therefore, that interventions operating at the level of explicit attitudes and beliefs are likely to be of limited value. This includes traditional diversity training programmes aimed at raising conscious awareness of the benefits of diversity. Organisations need to consider and address the motivational underpinnings of diversity (or lack of it), along with the cultural factors which may trigger or maintain the beliefs and attitudes that are impeding progress in many organisations. Attention needs to shift towards addressing the cultural, environmental, or systemic factors which might trigger or maintain implicit biases. Organisational culture has been recognised as playing a particularly important role in sustaining implicit, cognitive biases, given the normative influence that culture has on attitudes, beliefs, and behaviours (Pless and Maak, 2004; Wallace and Pillans, 2016). Indeed, it is argued that the success of diversity programs is dependent on organizational situational factors such as culture, strategy, and operating environments (Jayne and Dipboye, 2004), and therefore such initiatives will have limited success unless concepts and actions around diversity and inclusion are embed into core people processes such as performance management and leadership development.

This paper focuses on broadening focus to consider the how factors relating to the strategic and cultural context of organisations can influence interventions aimed at enhancing diversity and work-related wellbeing. Findings are presented from a study conducted within a large UK-based professional services organisation, aimed at exploring to what extent, and how, organisational culture and strategic context may be inhibiting the effectiveness of such interventions which were being implemented. Interviews were conducted with 22 employees across three different geographical locations, plus 2 focus groups each involving 7 employees. Participants were from a variety of teams and departments with various roles represented up to and including senior executives of the firm.

The findings are explored in relation to the competing values framework (Quinn and Rohrbaugh, 1983), and highlight how failure to take sufficient consideration of the changing strategic context or internal reality in terms of organisational culture can not only impede the success of such interventions, but also generate significant feelings of dissatisfaction and frustration among employees, and ultimately increase employee disengagement and intention to leave. The findings support the argument that by approaching diversity and inclusion from an organisational culture perspective, organisations increase the likelihood of achieving deeper, more sustainable shifts and reduce the risk of a gap emerging between diversity discourse and reality. In addition, the findings reinforce claims that organisations which promote a diverse identity but fall short in practice will not only fail to achieve significant advances towards diversity and inclusion, but also risk losing perceived legitimacy with employees and potential employees (Cole and Salimath, 2013).

1. Cole, B., & Salimath, M. (2013). Diversity Identity Management: An Organizational Perspective. *Journal of Business Ethics*, 116, 151-161; Jayne, M.E.A., & Dipboye, R.L. (2004). Leveraging diversity to improve business performance: Research findings and recommendations for organizations. *Human Resource Management*, 43(4), 409-424.

2. Pless, N.M., & Maak, T. (2004). Building an Inclusive Diversity Culture: Principles, Processes and Practice. *Journal of Business Ethics*, 54, 129-147; Quinn, R. E., & Rohrbaugh, J. (1983). A Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach to Organizational Analysis. *Management Science*, 29(3), 363-377.

3. Wallace, W., & Pillans, G. (2016). Creating an Inclusive Culture. CRF Research Report. Corporate Research Forum.

## **Worker safety, health, and well-being: updating and expanding NIOSH's Total Worker Health® approach**

S. Tamers\*<sup>a</sup> (Dr), LC. Chosewood<sup>b</sup> (Dr)

<sup>a</sup> Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Office for Total Worker Health, Washington D.C., UNITED STATES ; <sup>b</sup> Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Office for Total Worker Health, Atlanta, UNITED STATES

\* stamers@cdc.gov

The U.S. Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health's *Total Worker Health* (TWH) program defines TWH as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being. The TWH approach prioritizes changes to improve physical, organizational, and psychosocial factors that present possible risks in the work environment.

This presentation will first define the TWH integrated approach, including providing a brief history of its origin and evolution. It will then describe examples of workplace policies, programs and practices that have the potential to improve worker safety and health and advance overall worker well-being, across occupations and industries. This session will also explore scientific evidence-based interventions and opportunities to improve safety and health outcomes across the working lifespan, by highlighting the TWH well-being conceptual framework consisting of five domains (workplace physical environment and safety climate, workplace policies and culture, health status, work evaluation and experience, and home, community, and society). An emphasis will also be placed on new and emerging opportunities to intervene on work-related safety and health issues such as those related to the gig economy, aging worker populations, leadership, healthier supervisory practices, job flexibility, chronic disease prevention through better job design, and strategies for addressing opioid and other substance abuse through integrated programs and services.

Additionally, this presentation will introduce NIOSH's new research cross-sector on *Healthy Work Design and Well-being*, launched as part of the third decade of the National Occupational Research Agenda in the U.S. Thematic areas of focus of the research-to-practice effort will include recommendations that will:

- Address the safety and health implications of advancing technology;
- Decrease the burden of shift work, long hours of work, and sleep deficiency;
- Promote a sustainable work and non-work interface;
- Improve the safety, health, and well-being of workers with non-standard work arrangements;
- Identify and examine the impact of changes in worker demographics on worker safety, health, and well-being;
- Reduce work organization-related chronic health conditions among workers; and
- Improve the safety, health, and well-being of workers through healthier work design and better organizational practices.

1. NIOSH [2016]. National occupational research agenda (NORA)/national Total Worker Health® agenda (2016–2026): A national agenda to advance Total Worker Health® research, practice, policy, and capacity, April 2016. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2016–114.

2. NIOSH [2018]. Healthy Work Design and Well-Being Program. By Pana-Cryan, R., Swanson, N., Chosewood, C., Reeves, K., and Novicki, E. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2018–152, <https://doi.org/10.26616/NIOSH PUB2018152>

## Contribution of various job title variables in the construction of a job-exposure matrix for the job strain model factors

I. Niedhammer<sup>\*a</sup> (Prof), A. Milner<sup>b</sup> (Dr), A. Lamontagne<sup>c</sup> (Prof), JF. Chastang<sup>a</sup> (Dr)

<sup>a</sup> INSERM, Angers, FRANCE ; <sup>b</sup> University of Melbourne, Melbourne, AUSTRALIA ; <sup>c</sup> Deakin University, Geelong, AUSTRALIA

\* isabelle.niedhammer@inserm.fr

**Objectives:** A job-exposure matrix (JEM) is a matrix that provides measures of exposure according to job title, generally occupation. Only a few JEMs have been constructed for psychosocial work exposures at international level. The objectives of the study were to examine the contribution of various job title variables in the construction of a job-exposure matrix (JEM) for psychosocial work factors of the job strain model, to evaluate the validity, and to compare the results over time.

**Methods:** The study was based on national representative data of the French working population with samples of 46,962 employees (2010 SUMER survey) and 24,486 employees (2003 SUMER survey). Psychosocial work factors included the job strain model factors (Job Content Questionnaire): psychological demands, decision latitude, social support, job strain (combination of high demands and low latitude) and iso-strain (combination of job strain and low support). Job title variables were: occupation and economic activity of the company coded using standard classifications, and company size. A JEM was constructed using a segmentation method (Classification and Regression Tree - CART) and cross-validation. Gender-stratified analyses were performed.

**Results:** The best quality JEM for social support was found using occupation and company size. For decision latitude and psychological demands, there was not much difference using occupation and company size with or without economic activity. The validity of the JEM estimates was higher for decision latitude, job strain and iso-strain, and lower for social support and psychological demands. Differential changes over time were observed for psychosocial work factors according to occupation, economic activity and company size, that may have an impact on the JEMs.

**Conclusions:** This study demonstrated that company size in addition to occupation may improve the validity of JEMs for psychosocial work factors of the job strain model. Economic activity did not improve the validity of JEMs. These matrices may be time-dependent and may need to be updated over time. More research is needed on JEMs given that these matrices may be a useful tool in studies that did not have any exposure assessment but job title. Special attention should be given to other job title variables to improve the validity of these matrices, on the study of other psychosocial work factors not included in the job strain model and on the assessment of additional summary measures of exposure such as duration or frequency.

## **Development of a burn-out simulation model based on a complex adaptive system approach using system dynamics and retrospective scenario data.**

GA. Veldhuis\*<sup>a</sup> (Mr), MH. Van Zwieten<sup>a</sup> (Mrs), IM. Niks<sup>a</sup> (Dr), J. Bouwman<sup>a</sup> (Dr), N. Wiezer<sup>a</sup> (Dr), HM. Wortelboer<sup>a</sup> (Dr)

<sup>a</sup> The Netherlands Organization for Applied Scientific Research (TNO), Leiden, NETHERLANDS

\* [guido.veldhuis@tno.nl](mailto:guido.veldhuis@tno.nl)

**Background:** Burnout is a persisting problem, despite years of research efforts into causes and interventions. The factors causing burnout are complex and multi-vectoral, they evolve over time, and team dimensions are involved. Currently used interventions not always consider the full complexity of the problem and this might be a reason for the lack of decrease in workers with burnout. In the present study, we developed a dynamic multidimensional chronic stress model based on a complex adaptive system approach. This model can be used to simulate the effect of personal perception and relational behavior on chronic stress and burnout. Simulations *prior to* implementation can help in understanding behavioral patterns that lead to a burn-out and in changing ingrained patterns.

**Methods:** First, a conceptual biopsychosocial health model is developed for mutual understanding and capturing insights of the processes involved based upon extensive literature studies and discussions with both knowledge and experience experts. Next, a semi-quantitative system dynamic burnout simulation model is developed. This model includes key elements of interactions and feedback loops between variables, among them personal perception of demands, task load, effort, self-efficacy, capacity, motivation, and performance, changing over time. Then, additional personal retrospective story-data of participants is gathered using a novel approach, and scenarios were translated to essential concepts into a quantitative stock and flow model. Via retrospective longitudinal personal data we were able to collect dynamic interrelationship process information on the trajectory towards burnout and thereby to enrich the model.

**Added value:** The current results indicate that our first version of the system dynamic burnout simulation model is able to simulate realistic long-term patterns of chronic stress and emergence of recovery, which show the potency of a shared decision tool for behavioral change. A major insight suggests that burnout prevention programs focusing on persons at risk alone might not be effective, as a positive work environment with shared awareness of early warning signals and active support from others seems to be crucial to help persons at risk to prevent burnout. To achieve our aim of developing a sustainable “personalized” approach for improving wellbeing at diverse organizations, a long term integrated participative action research program with companies, insurers and consultants has been started to improve the simulation model including socio-cultural-economic effects of colleagues, management and work-environment on the reduction of chronic stress and burnout, in the end improving wellbeing at the workplace.

## Revisiting the Value of Respect: Cultivating Wellbeing at Work through Moral Competency

L. Sekerka<sup>\*a</sup> (Dr)

<sup>a</sup> Menlo College, Atherton, Ca, UNITED STATES

\* lesekerk@gmail.com

**Purpose:** Management philosophers maintain that respect must be conferred upon every individual, given their potential to be a moral agent. However, if managers expect to see respect in the workplace, they must demonstrate and consistently role-model the behavior themselves. This means proactively addressing incivility and discrimination, before disrespect becomes an ethical issue.

**Overview:** The concept of workplace respect is perceived, framed, and defined in many ways. Distinctions of respect can be made among relationships, both external and internal to the organization. This paper focuses on interpersonal relationships, which can sometimes make goals of achieving diversity, equity, and inclusion difficult to accomplish. Given the pronounced rise of xenophobic sentiment contributing to Islamophobia and anti-Muslimism, researchers, practitioners, and educators need to work together to help managers expand upon their underlying assumptions, providing the means to promote respect from alternative decision-making paths.

**Design/Methodology:** Insights from *Positive Organizational Ethics* are leveraged to present an ethical decision-making model from two perspectives: individualistic and tribal-collectivistic. The intent is for managers to become aware of and generate mutual respect, especially toward organizational members who exercise values emanating from alternative, marginalized, or minority cultures.

**Approach/Intervention:** Leveraging prior research in ethical decision-making, this work shows how alternative perspectives influence cognitions and emotions that can impact management response-actions. Expanding upon a traditional Western framework offers a more mindful consideration of alternative ways of thinking, feeling, and being in the world.

**Results:** The model set forth in this paper can be used in leadership and management education as a tool to encourage awareness and deliberate mindfulness. Suggestions for its application are offered, including the presentation of specific moral competencies, skills that can be learned to support respect as a moral action.

**Practical Implications:** Learning to be respectful toward differing and potentially divergent perspectives is crucial in developing trans-cultural sensitivity and dialogue, necessary in today's global workplace.

**Originality/Value:** Management tends to reify reactionary approaches toward resolving ethical issues, rather than leveraging a strength-based approach to prevent them from occurring. This research supports the notion of ongoing adult moral development in organizational settings, as a means of cultivating protracted and shared wellbeing.

1. De Cremer, D., and T.R. Tyler. 2005. Am I respected or not? Inclusion and reputation as issues in group membership. *Social Justice Research* 18(2): 121-153.

2. Sekerka, L.E. 2016. *Ethics is a daily deal: Choosing to build moral strength as a practice*. Basel, Switzerland: Springer International Publishing AG.

3. Sharma, S., and N. Mann. 2018. Workplace discrimination: The most critical issue in managing diversity. In N. Sharma, F.K. Singh, and S. Pathak (Eds.) *Management techniques for a diverse and cross-cultural workforce*, 206-223. IGI Global.

## **Job strain, health complaints and work-related wellbeing among public sector line managers. Does social support matter?**

IJ. Jonsdottir\*<sup>a</sup> (Prof)

<sup>a</sup> School of Business, University of Iceland, Reykjavik, ICELAND

\* ingajona@hi.is

For the past two or three decades public sector line managers have faced changing working context and increased scope of responsibilities and psychological job-demands, for example within HRM or people management. However, it is unclear whether these changes have led to negative effects on male and female line managers' health and work-related well-being. It is also of interest to know more about possible buffering effects of social support for the wellbeing of middle-line managers. The purpose of the study is to further the understanding of public sector line managers' job and working environment. It is of particular interest to explore line managers' job characteristics with regard to job strain and gender. We ask whether there is a link between job strain on one hand and health and well-being on the other hand among senior- and middle-line male and female managers in the public sector in Iceland's largest municipality. This is a mixed-methods case study. Data drawn on is from an on-line survey. A questionnaire was sent to all senior and middle-line managers in three out of five administrative departments in the City of Reykjavik municipality, or a total of 357 recipients. The response rate was 65%. Four questions were used on job demands and five questions on job control to create a binary indicator for job strain, which is our independent variable. The dependent variables are on the one hand job (dis)satisfaction, and burnout, which is a proxy measurement that was created as an indicator variable by combining information on personal accomplishment and emotional exhaustion. On the other hand as dependent variables are physical health symptoms where we use 14 health problems queried about in the survey. Our findings do not support the notion of higher and middle management jobs as primarily high strain jobs, i.e. with high job-demands and low job-control. Using Ordinary Least Squares (OLS) regression method, we regressed each of the 14 health problems separately on gender while controlling for demographics, job strain, tenure, number of staff and type of manager. We find that women are more likely than men to report having sometimes or always the following health problems: Myositis, back/shoulder pain, headache, sleep difficulty and excessive worries. Drawing on interviews with twenty middle-line managers in the three departments we consider how they experience the social support they receive when tackling administrative challenges and complex people management issues. When tackling such administrative challenges the interviewees bring up the importance of contact and communication with the HR manager whose chief areas of support involve expert advice and coaching. Thus, the HR manager appears to be the interviewees' main source of assistance. Apart from the HR manager and other HR practitioners, it is mainly the closest assistant manager and colleagues, often from outside the organisational entity, who back up middle line managers in their wrestling with tough staff-related issues.

1. The author Inga Jona Jonsdottir is an Associate Professor at the School of Business at the University of Iceland.

## The need for inclusiveness at work in a changing world

ST. Innstrand\*<sup>a</sup> (Prof)

<sup>a</sup> Norwegian University of Science and Technology, Trondheim, NORWAY

\* siw.tone.innstrand@ntnu.no

Social trends with an aging population and more retiree than new entrees to the work life urge the need to retain and effectively utilize *all* employees. At the same time a changing world of work characterized by globalization, immigration, worker migration, and the entry of more women and members of racial and ethnic minority groups have changed the composition of the workforces. This demand for more knowledge on how to create inclusive work environment and utilize of the strength and potential of a diverse workforce.

The present study responds to this need by providing empirical research on how supervisors affect employees feeling of inclusion and hence impact beneficial outcomes for both the individual and the organization. More specifically, the aim of the present study was to test a theory-based model of the relationship between contextual antecedents (empowering leadership, social support from leader, and fairness of the supervisor), inclusiveness, and employee outcomes (work engagement, commitment, work-home facilitation, and work-home conflict). Moreover, gender differences was explored in both the means of the variables and their interrelationships.

By means of Structural equation modeling and multigroup analyses the proposed model was tested in a representative sample of academics and faculty staff at the university and university colleges in Norway (N=12,170). The sample was quite equally dispersed across gender with 54% women and 46% men. In general, the present study suggests that men perceived their working environment as more inclusive as compared to women. For both men and women an empowering leadership and social support from leader is related to their perception of inclusiveness, which again is related to increased commitment, work engagement and improved work-home interaction. These results urge the need for an inclusive leadership for fostering inclusive work environment, and suggests that an inclusive work environment is beneficial for both the organization and the individual worker.



## Leadership quality and self-assessed work ability in the home-care sector

M. Forsman<sup>\*a</sup> (Prof), M. Alderling<sup>b</sup> (Mr), I. Målqvist<sup>b</sup> (Mrs), L. Hillert<sup>a</sup> (Dr), A. Bergman Rentzhog<sup>a</sup> (Mrs), C. Lind<sup>a</sup> (Dr)

<sup>a</sup> Karolinska Institutet, Stockholm, SWEDEN ; <sup>b</sup> Stockholm County Council, Stockholm, SWEDEN

\* mikael.forsman@ki.se

### *Introduction*

Home-care personnel have one of the highest sick leave rates in Sweden. Both work-related musculoskeletal injuries and stress-related problems are common. With an increasing proportion of elderly in the society and the expected shortage of labour, there is a need to identify factors affecting work ability. An increase in the employees' work ability will lead to lower staff turnover, higher probability of employees remaining until retirement, and lower costs for the employers. The aim of this study was to investigate how leadership quality including support from the supervisor is associated with self-assessed work ability in the home-care sector.

### *Methods*

A cross-sectional questionnaire was used. The ratings of 386 employees (86% women, mean age=45, sd=13) working for private and public home-care providers in Stockholm County, Sweden, were analysed. A leadership index was created comprising four questions about the quality of leadership (development opportunities, prioritizing job satisfaction, work planning and solving conflicts) and two questions about supervisor support (support from the supervisor, and to what extent the supervisor listens to problems). The replies were dichotomized and summed into the index. Based on tertiles of the index distribution, three groups were created. Three questions on perceived physical and mental work ability from the Work Ability Index (WAI) were used as outcome variables; self-assessed current work ability in relation to physical demands of the job, self-assessed current work ability in relation to the mental demands of the job, and the worker's own prognosis of his or her work ability in two years' time. The results from the three WAI-questions were also compared with those from a public health questionnaire of 2014 from Stockholm County, comprising a random sample of workers of various occupations.

### *Results*

All the three outcome variables, i.e. physical and mental work ability, and the worker's own prognosis of his or her work ability in two years' time, were significantly lower in the tertile with the lowest leadership index (PPR were significant and ranged between 2.0 and 2.5). Neither age nor numbers of years working for the same employer were confounders. Low work ability (poor-moderate, based the three included WAI-questions) were two to three times as common among home-care personnel (i.e. 31-36%) compared to the random population sample.

### *Conclusion*

The results indicate that leadership quality is strongly associated with home-care personnel's work ability. Although this was a cross-sectional study, the large differences in the self-assessed work ability among the first and third tertiles of the home-care personnel, emphasizes the importance of promoting leadership quality.

## **Outsourcing opportunities and obstacles: how to promote health and safety in workplaces with multiple contractors**

MP. Van Egmond<sup>\*a</sup> (Dr), LN. Hummel<sup>a</sup> (Ms), LM. Van Dam<sup>a</sup> (Ms), EM. De Vroome<sup>a</sup> (Dr)

<sup>a</sup> The Netherlands Organization for Applied Scientific Research (TNO), Leiden, NETHERLANDS

\* martine.vanegmond@tno.nl

### Background

There is an increase in economic activity across European countries, prominently taking place in the construction, chemical and metal industries. In these industries, a large part of the work is outsourced to contractors and independent workers. Hence, multiple companies are working in a chain of command. Obstacles as miscommunication, time pressure and dependency in such chains contribute to unsafe working conditions and likelihood of accidents. In the Netherlands, regulations are present, particularly in the construction industry, to prevent such hazards. However, in other industries regulations are still premature. Furthermore, the implementation level of these regulations across industries is unknown. Overall we assume that workers' health and safety are impeded in case of outsourced work, but evidence is needed in order to intervene and improve health and safety in these working conditions.

### Methods

In 2016, a survey was conducted across subcontractors in the Netherlands to explore the implementation of current regulations for outsourced work, the corresponding level of prevention and implications for safe and healthy work. With over 2100 participants in the construction, chemical and metal industries and the ambulatory care sector, we calculated scores to obtain a representative sample. We performed descriptive analyses as well as t-tests and chi-square tests to study differences between independent workers, small and large companies and differences between industries. In October 2018, a second survey was conducted to measure progress of several measures of workplace health promotion in outsourcing situations. In addition, a survey was conducted among companies who outsource work, to include their perspective. We will present both the findings from 2016 and 2018 at the conference, as well as potential developments over the past two years.

### Results

The 2016 survey showed that respondents value measures for health and safety working being taken by the contractor who hires them (84%), and consider it essential to discuss planning, scheduling and time pressure in the terms of the contract (72%). In reality however, only 29% experienced that scheduling and time pressure were discussed, and 34% experienced safe equipment being offered by the contractor. The majority of respondents reported to have little or no influence in the preparations or negotiations for the work, or any say in the working conditions. Only 12% of the respondents was able to negotiate working arrangements prior to commencing work, and these were mostly large companies. Evaluations of health and safety aspects were also privileged to large companies. Independent workers and small contractors however reported to have more flexibility in their work activities than larger companies. Many participants expected that if contractors were more involved in the project execution phase, the risk of accidents in the workplace would be reduced. The results from the 2018 measurement will be available for presentation at the conference.

### Conclusion

Opportunities for shared ownership and enhanced communication regarding health and safety in outsourcing working conditions are still unexplored by many contractors. Involving subcontractors in the project preparation phase; giving them a vote on scheduling, planning and equipment, is likely to promote their health and safety.

## Distinguishing groups and exploring health differences among multiple job holders aged 45 years and older

S. Bouwhuis<sup>\*a</sup> (Mr), T. Hoekstra<sup>b</sup> (Dr), P. Bongers<sup>c</sup> (Prof), C. Boot<sup>a</sup> (Dr), G. Geuskens<sup>c</sup> (Dr), A. Van Der Beek<sup>a</sup> (Prof)

<sup>a</sup> Amsterdam UMC, Amsterdam, NETHERLANDS ; <sup>b</sup> VU University, Amsterdam, NETHERLANDS ; <sup>c</sup> TNO, Leiden, NETHERLANDS

\* stef.bouwhuis@tno.nl

**Background.** Previous research has shown that multiple job holders are a heterogeneous group of workers. As a consequence, multiple job holding (MJH) may result in different health consequences for different groups of workers. For instance, a recent Dutch cross-sectional study found that only employees who did not have multiple jobs out of financial necessity experienced lower burn-out scores. Our aim is to identify distinct groups of older multiple job holders and to explore health differences between these groups.

**Methods.** We selected respondents from STREAM, a Dutch cohort among persons aged 45 years and older, who reported having multiple jobs (N=702). We applied latent class analysis to identify groups of multiple job holders using variables in the following domains: reasons for MJH, satisfaction with work and MJH, work characteristics, ability to change life and work, social factors, and financial factors. Subsequently, differences in health, measured with the SF-12, between the identified groups were studied cross-sectionally and longitudinally (one year of follow-up), using linear regression analyses.

**Results.** Four groups of older multiple job holders were identified: (1) a vulnerable group (N=145), multiple job holders in this group preferred having one job, and had jobs with high demands and low resources; (2) an indifferent group (N=134), multiple job holders in this group did not experience many benefits or disadvantages of multiple job holding (MJH); (3) a happy hybrid group, multiple job holders in this group were all self-employed in their second job (N=310); (4) a happy combination group, multiple job holders in this group all had a second job as an employee (N=113). Both the happy hybrid and happy combination groups preferred MJH and experienced benefits of it. At baseline, the happy hybrid (B=1.86 95%CI = 0.24-3.47), the happy combination (B=2.91; 95%CI = 0.96-4.85), and the indifferent group (B=3.09; 95%CI = 1.23-4.94) experienced better physical health than the vulnerable group. In addition, the happy hybrid (B=4.54; 95%CI = 2.93-6.15), the happy combination (B=6.12; 95%CI = 4.19-8.05), and the indifferent group (B=4.63; 95%CI = 2.79-6.48) also experienced better mental health than the vulnerable group at baseline. We found no significant differences regarding changes in health after one year of follow-up.

**Conclusions.** Four groups of older multiple job holders could be distinguished. At baseline, vulnerable multiple job holders experienced worse physical and mental health. We recommend future research on MJH to take into account these distinct groups of multiple job holders. To support vulnerable multiple job holders, employers are recommended to increase flexibility to prevent conflicts between work schedules and policy-makers are recommended to stimulate life-long learning to enable vulnerable multiple job holders to find higher quality jobs that match their preferences.

## **Employees' attitude changes regarding work support in Activity-based Flexible Offices over time**

AL. Osvalder\*<sup>a</sup> (Prof), M. Babapour<sup>a</sup> (Dr)

<sup>a</sup> Chalmers University of Technology, Gothenburg, SWEDEN

\* alos@chalmers.se

In recent years, there has been a growing interest in Activity-based Flexible Offices (A-FOs) due to developments of mobile technologies that allow for an increased mobility, and a need to optimise the use of space and resources to reduce costs. A-FOs are office environments with a desk-sharing policy that comprise of a variety of working locations to meet employees' work needs and preferences. Some studies show increased work satisfaction and improved communication in A-FOs, while others show decreased satisfaction and impeded communication. The purpose of this study is to explore if employees' attitudes regarding work support in A-FOs change over time.

Survey data was collected electronically at a case organisation in Sweden two months (54 employees) and six months (66 employees) after relocating to an A-FO. About 50% completed the survey.

The results showed that after 6 months the employees were more satisfied with the A-FO solution and its ergonomic design than after 2 months, and the work was estimated more effective. They were also less visually disturbed by people moving around in the localities or sitting close to them, but more disturbed by background noise and conversations. Seeking for and using quiet meeting spaces and zones were more pronounced by time.

The results from open-ended questions showed that the positive attitude changes over time were an increased appreciation of colocation with other groups and ease-of-access to inter- and intra-group colleagues. The negative attitude changes were an increased need for meeting spaces and a decreased need for separating the quiet zones from other zones. Reporting of problems with setting up and packing away, insufficient quiet spaces and problems with technical aids were consistent over time.

The increased need for meeting spaces can be explained by the employees' increased appreciation of colocation and proximity to other groups. This may have led to increased interactions and collaborations, and therefore a need for more meeting spaces. The set-up problems may have been increased due to acclimatization with the desk-sharing concept. These findings are important to consider from a management and leadership perspective, especially in order to improve the facilities and work environment in A-FOs.

To conclude, it is important to consider that employees' need of work support may change over time, and that the initial A-FO solution may not always satisfy after a period of time since it is based on employees' needs prior to relocation. As work activities and organisations are dynamic entities, it is important to consider redesigning A-FOs as new needs emerge.

## **This is so my thing and I have got all support I've needed! Organisational strengths use support generating positive emotions among teachers utilizing dog assisted pedagogy**

L. Mäkelä\*<sup>a</sup> (Prof)

<sup>a</sup> University of Vaasa, Vaasa, FINLAND

\* llbm@uva.fi

In modern working life employees need to be flexible and proactively react to ongoing changes and develop their competences and skills accordingly. In addition to correct ones' weaknesses and accumulate new skills building on employees' strengths is essential element recognized specially in the field of positive psychology (Luthans & Youssef, 2007; van Woerkom et al., 2016). Earlier literature has reported several benefits of strength use and, for instance, increase in individual well-being and decrease in stress. Organisation's culture and its representatives (e.g. supervisors) actions and attitudes play an important role how employees' strength use is capitalized in organisations. Organisations which help employees to understand that they bring unique talents and strengths to bear on their work and support them to do so, are likely to gain advantages of that. Strengths use support have found to be linked to higher levels of work engagement and lower levels of burnout and have also positive effect on organizational outcomes such as decreased absenteeism. These kinds of positive outcomes of strength use support are likely to be linked to emotions employees experience. However, any studies focusing on the question what kind of employee emotions strength use support may generate was not found.

There are several different kinds of arenas in which people are good at and have strengths which could be utilized in work setting. Recently, several different professionals have included Animal assisted interventions (AAI) to their jobs, for instance, some of the psychotherapists, physiotherapists and teachers are doing their work with a help of animals. AAIs have become increasingly popular especially in educational setting and Animal Assisted Pedagogy (AAP) is defined as "a goal oriented, planned and structured intervention directed and/or delivered by educational and related service professional" (Jegatheesan et al., 2013). AAP is most often carried out with the help of dogs (Correale et al, 2017; Cunha et al., 2017) and this kind of is called also dog or canine assisted pedagogy. Thus, it is very likely that these people who are willing to include AAIs as being part of their work like animals, are good at handling them and have skills to train them. Therefore, allowing and supporting employees to start working with the help of the animals in the professional context where it is not a typical or a norm, can be seen as organizational strength use support.

In this study we focus on perceptions about organizational strength use support and related emotions. Data consists of 10 semi-structured interviews with Finnish teachers who have adopted a novel pedagogical method, in particular, dog assisted pedagogy as a part of their work. Qualitative content analysis was conducted with the help of NVivo software.

We found that the possibility to start utilization of DAP in their school was strongly linked to the organizational strength use support and perceived supervisor support. Very positive emotional expressions, such as happiness, gratitude, pride and joy were identified from the data and positive organizational outcomes were also present, for example, stronger organizational commitment and better work motivation.

1. Cunha, M. P., Rego, A., & Munro, I. (2018). Dogs in organizations. *Human Relations* (early citing).
2. van Woerkom, M., Bakker, A. B., & Nishii, L. H. (2016). Accumulative Job Demands and Support for Strength Use?: Fine-Tuning the Job Demands-Resources Model Using Conservation of Resources Theory, *101*(1), 141–150.
3. Luthans, F., & Youssef, C. M. (2007). Emerging positive organizational behavior. *Journal of Management*, *33*, 321–349.

## Applying neuroscience research to boost creativity

S. Augustin\*<sup>a</sup> (Dr)

<sup>a</sup> Design With Science, La Grange Park, IL, UNITED STATES

\* sallyaugustin@designwithscience.com

Many organizations, public and private, link the success of their endeavors to the creative performance of their members. Neuroscientists have learned a lot about the design of spaces in which people, individually and in groups, are most likely to think and act creatively, and their insights can be applied to develop workplaces where individuals and teams charged with creative tasks perform to their full potential. Neuroscientists have tied enhanced creative performance to design elements at a variety of scales, from room to city level. Systematic research has linked specific surface colors (green; Lichtenfeld, Elliot, Maier, and Pekrun, 2012), light colors (3000 Kelvin; Weitbrecht, Barwolff, Lischke, and Junger, 2015), and the presence of leafy plants (Studente, Seppala and Sadowska, 2016) to more creative thinking, for example. Similarly, certain other visual, olfactory, acoustic, and haptic experiences, as well as psychosocial conditions, have been associated with enhanced creative achievement. Individual elements combine in networks that elevate users' creative problem solving capabilities (Schifferstein and Desmet, 2008). Case studies will detail how neuroscience research has been effectively applied in practice in a diverse set of real world work-related settings via scientist-designer collaborations and how obstacles to implementation can be overcome. People developing and using environments where complex issues need to be resolved must be familiar with research linking place design and enhanced creative thinking—resources are limited and we don't have time for "do-overs."

Stephanie Lichtenfeld, Andrew J. Elliot, Markus A. Maier, and Reinhard Pekrun. 2012. "Fertile Green: Green Facilitates Creative Performance." *Personality and Social Psychology Bulletin*, vol. 38, no. 6, pp. 784-797.

Hendrik Schifferstein and Pieter Desmet. 2008. "Tools Facilitating Multi-Sensory Product Design." *The Design Journal*, vol. 11, no. 2, pp. 137-158.

Syvie Studente, Nina Seppala and Noemi Sadowska. 2016. "Facilitating Creative Thinking in the Classroom: Investigating the Effects of Plants and the Colour Green on Visual and Verbal Creativity." *Thinking Skills and Creativity*, vol. 19, pp. 1-8.

W. Weitbrecht, H. Barwolff, A. Lischke, and S. Junger. 2015. "Effect of Light Color Temperature on Human Concentration and Creativity." *Fortschritte der Neurologie, Psychiatrie*, vol. 83, no. 6, pp. 344-348.

## Optimization of the Citizen Science approach to the workplace: A qualitative pilot study

M. Van Den Berge<sup>\*a</sup> (Ms), G. Hulsege<sup>a</sup> (Dr), S. Tamminga<sup>b</sup> (Dr), K. Proper<sup>c</sup> (Dr), L. Den Broeder<sup>c</sup> (Dr), C. Hulshof<sup>b</sup> (Prof), A. Van Der Beek<sup>a</sup> (Prof)

<sup>a</sup> Amsterdam UMC, Location VUmc, Amsterdam, NETHERLANDS ; <sup>b</sup> Amsterdam UMC, Location AMC, Amsterdam, NETHERLANDS ; <sup>c</sup> Prevention and Health Services, National Institute for Public Health and the Environment, Centre for Nutrition, Bilthoven, NETHERLANDS

\* m.vandenberge@vumc.nl

**Background:** Many blue collar workers experience health problems due to unhealthy lifestyle behaviors and physically demanding work. However, health interventions often do not reach blue collar workers due to a poor fit to their specific needs and possibilities (Harris, Huang, Hannon & Williams, 2011). A new promising approach, called citizen science, engages citizens in research activities. This means that citizens cooperate as subjects, instead of being investigated as objects. This gives citizens the opportunity to actively participate as a co-researcher to produce knowledge and provide useful tools and resources (Den Broeder, Devilee, Van Oers, Schuit, & Wagemakers, 2016). In this study, blue collar workers are engaged as citizen scientists, to ensure that health interventions better fit with their needs and improves the reach of health interventions. However, this citizen science approach still needs to be adapted to the workplace. Therefore, the aim of this pilot study is to optimize the citizen science approach for blue collar workers by determining which elements can be used and how these elements should be adjusted.

**Methods:** In this qualitative pilot study, data will be collected by semi-structured interviews and a small scale pilot test. The goal of the interviews is to gather information to conduct the citizen science approach at the workplace of blue collar workers. Individual interviews will be conducted with at least 12 blue collar workers. In addition, 10 interviews will be performed with employers, managers and occupational health practitioners. All interviews will be audio taped, transcribed and analyzed using thematic content analysis. Based on these interviews, the researchers will optimize the citizen science approach to the specific work context and pilot test this approach among 10 blue collar workers.

**Results:** It is expected that the citizen science approach will consist of four phases: 1) A small community meeting, 2) Two workshops to educate workers as co-researchers 3) The blue collar workers investigate how lifestyle can be improved at the workplace, and 4) Health intervention selection and adaption.

This pilot study is still ongoing and therefore the results are not available yet. However, this pilot study is expected to be feasible because needs, time and knowledge of the blue collar workers and other relevant stakeholders are taken into account.

It is expected that the pilot study will be completed before the congress and therefore results will be presented there.

**Conclusion:** Based on previous research, it is expected that the citizen science approach is feasible at the workplace. For example, previous research suggest citizen science as a promising approach in disadvantaged population groups by strengthening personal and social skills (Den Broeder et al. 2017). Furthermore, blue collar workers and other relevant stakeholders are involved in the decision making process starting from the beginning, taking the needs and possibilities into account. It is expected that health interventions do reach blue collar workers more often and that early drop-out will decrease.

**Key words:** Blue collar workers, worksite health promotion, unhealthy lifestyle, physically demanding work, citizen science.

1. Harris JR, Huang Y, Hannon PA, Williams B, 2001. Low-socioeconomic status workers: their health risks and how to reach them. *Journal of occupational and environmental medicine*. 53(2):132-8
2. Den Broeder L, Devilee J, Van Oers H, Schuit AJ, Wagemakers A. 2016. Citizen Science for public health. *Health Promot Int* Dec 23. pii: daw086, <https://doi.org/10.1093/heapro/daw086>.
3. Den Broeder, L. et al., (2017). Public Health Citizen Science; Perceived Impacts on Citizen Scientists: A Case Study in a Low-Income Neighbourhood in the Netherlands. *Citizen Science: Theory and Practice*. 2(1), p.7. DOI: <http://doi.org/10.5334/cstp.89>



## **Coordination issues in multidisciplinary design projects in occupational health service: asymmetries, operational and cognitive synchronization**

C. Gouvenelle<sup>\*a</sup> (Mr), G. Rix Lievre<sup>b</sup> (Prof), F. Coutarel<sup>b</sup> (Mr)

<sup>a</sup> Laboratoire ACTé, UFR STAPS, université Clermont Auvergne - APST18, Vierzon, FRANCE ; <sup>b</sup> Laboratoire ACTé, UFR STAPS, université Clermont Auvergne - APST18, Clermont Ferrand, FRANCE

\* gouvenelle@gmail.com

At a time when occupational health is once again in question, innovation and design are development paths for Occupational Health Services to invent their future.

We question the design processes. It is a question of succeeding to develop the multidisciplinary functioning of the teams in order to improve the efficiency of the collectives as well as the well-being of the persons. Thus, a synchronization of work into design project allows people to interact with each other and with organizations.

We seek to grasp in the projects ways of doing things and how asymmetries are worked out within collectives in order to be able to act on the design process (Cahour, 2002; Darses, 2002).

In these contexts, people face endogenous or exogenous constraints. It is important to understand under what conditions people confront their own guidelines to those of others as well as to different forms of prescriptions. Thus, the design process evolves according to the adaptations of the people involved in the action. It is enriched, instinctively actualized according to the situations and the experience. Indeed, what is valuable for people is not fixed.

The results that emerge confirm that some members are in favorable asymmetry positions. Although that of the pilot generally is not disputed, it does not systematically traduce by collective dynamics. In addition, there may be asymmetrical interactions which may brake on the development of collective activity. That is the case for the pilot who only produces cognitive synchronization. It is the same when there are some implicit in the exchanges between persons that bring to socio-cognitive gap. So that dynamics could emerge, it is necessary for the pilot to support the construction of the participative framework of persons and make the decisions. So, it reinforces his position of favorable asymmetry and eases adoption of the decisions by the persons engaged in the projects. New targets can be set at these intermediates' stages. There allow to define new work tasks to the persons as part of a renewed work activity. It opens new outlook in terms of commitment, quality, sense of work. In interviews, people attribute positive valences to situations in which they have not been constrained by others or by the organization. These are the situations in which renormalization has been best lived by people, without hindrance or dilemmas.

The well-being of people is part of the equation, as is the achievement of mission or performance. These support collective dynamics whose commitment is the foundation of the construction of a wellbeing at work perception and contribute to the construction of individual and collective health (Zapf, 2002).

1. Cahour, B. (2002). Décalages socio-cognitifs en réunions de conception participative. *Le Travail Humain*, 65(4)
2. Darses, F. (2002). A cognitive analysis of collective decision-making in the participatory design process. In *Proceedings of the Participatory Design Conference* T.Binder, J.Gregory, I.Wagner (Eds.) Malmö, Sweden, June 2002. (pp. 23–25).
3. Zapf, D. (2002). Emotion work and psychological well-being: A review of the literature and some conceptual considerations. *Human Resource Management Review*, 12, 237–268.

## The KivaQ method created a space for reflection - inspiring results in improved employee work wellbeing

S. Simola-Ström<sup>\*a</sup> (Mrs), IM. Elfving-Gustafsson<sup>b</sup> (Mrs), O. Näsman<sup>a</sup> (Dr)  
<sup>a</sup> KivaQ, Dalsbruk, FINLAND ; <sup>b</sup> Ålands hälso- och sjukvård, Åland, FINLAND  
\* sabina.simola-strom@kivaq.fi

**Background** Experiential learning (by John Dewey), described as "learning through reflection on doing" is emphasizing people's ability to self-reflect on earlier experiences. The inner reflective evaluation deepens the understanding for personal needs, and increases engagement in problem solving, which is a requirement for development and creation of new. At a work place this process requires time.

The KivaQ method (questionnaire + workshop), based on the constructive learning framework, has a strong focus on team empowerment, which is created through space for reflection and group development.

**The method** The overall goal is to improve the organizations' effectivity and productivity through improved work wellbeing. The KivaQ method is a structured work wellbeing development process. During the two-day development workshop, the team together discusses, decides and prioritizes concrete actions to improve their team's work wellbeing. The actions are followed up and further planned during three follow ups. An essential part of the method is the KivaQ work wellbeing questionnaire (7 items), which is used to map the starting point, monitor the effects and enables a systematic follow up of implementation.

**The material** The KivaQ workshop was used as tool for development of work wellbeing at an Intensive care unit, (Ålands hälso- och sjukvård) at the Åland Islands, in Finland. Three former wards had been combined to one, with appr. 30 employees, which created many challenges, and there was a strong need to meet around and discuss common values, goals and processes.

**Results** At the first baseline measurement, the KivaQ index (average of the 7 questions) was 6,65 (scale 1-10). After the first development workshop was held, the KivaQ index had gone up to 7,48. The average on how much one has enjoyed coming to work had increased from 5,83 at baseline to 7,22 at first follow up and how content you are with the immediate superior had increased from 6,87 to 7,83.

**Conclusions** After the first follow up, the results show that there is a remarkable effect of the workshop on work wellbeing. The KivaQ questionnaire results are also confirmed by the co-workers in the team during the first follow up saying there is more openness, respect and laughter.

The results indicate that a structured process, which main components constitute of self-reflection and problem solving, can develop self-management and empower the work place atmosphere.

Results from the last follow up measurements will be presented.

## Beyond Frederic Laloux: Organisations' master code

V. Grosjean\*<sup>a</sup> (Dr)

<sup>a</sup> INRS, Vandoeuvre, FRANCE

\* vincent.grosjean@inrs.fr

The success of Frederic Laloux 's book *Reinventing organizations*, at least in the US community, could not be understood if its link to Integral Theory and integral community is not seen. This theory (Collins 2016) is based on a developmental (evolutionary) conception of human consciousness and of the ways [i.e. values system] organizations operate. Following this book, many companies in France want to experiment "*teal model of organisation*" or in french "*entreprise libérée*"'s model. However, following the theory, to function at a healthy teal or integral level of organisational development implies that all the contributing qualities of the preceding levels of development are integrated\* in the resulting collective mode of functioning. As a complement and prolongation to the keynote talk of Sergey Solonin(Beck, Larsen et al. 2018) in this conference, also based on this theoretical frame, we want to discuss with the participants to this workbench **how this integration is supposed to be realized by the organizational model** that is taught by the most prominent consulting companies promoting this new model in France for NGOs and companies. We want then to exchange in this workbench to see to what extent, in the view and opinion of the participants, this can be considered as a realistic basis for any healthy organisation. In this spirit, we will explain the links that should be made between those new forms of organisation and the notion of holon as originally developed by Arthur Koestler (a notion also used in integral theory and coined in "holacracy, one of the new form of organisations). Technically, the animation of the workbench will be based on well-established technics of community education.

Here follows a very short summary of the proposition that could be discussed as a set of prerequisites to any sane organisation, here limited to the basic group level (circle), which is a typical component of these organisations. Using Beck/Graves coding of the theory using colors and letters (Beck et al. 2018), the organisation of the group must comply with the following set of essential requirements:

- ensuring a strong security of individuals on the material level (AN Beige) ;
- the development of a strong relationship of trust, granted by the inclusion in a small group of peers (BO Purple) where everyone get consideration and respect ;
- the existence of clear formal procedure, including a formal **exclusion procedure** (DQ Blue for the rule, CP Red for its activation);
- the right to have divergent ideas and the use of reason for arbitration (ER Orange) and
- the existence of a general principle of mutual benevolence accompanied by the right for everyone to express her/his personal feelings regarding collective decisions (FS Green).

So a question to start the discussion during the workbench could be : Is this set a prerequisite to any egalitarian efficient organisation where wellbeing and personal growth and self-expression could be easy to develop ?

\* "Transcended and included", following Wilber words.

1. Koestler, Arthur (1967). *The Ghost in the Machine* (1990 reprint ed.). Penguin Group. 400 p.
2. Collins, R. (2016). *Reinventing Management, Part 1: What Color Is Your Organization?* Huffington Post. Washington.
3. Beck, D., Larsen, T.H., Solonin, S., Viljoen, R. (2018). *Spiral Dynamics in Action: Humanity's Master Code*, Wiley. 296 p.

## The New Zealand Workplace Barometer

TA. Bentley\*<sup>a</sup> (Prof), D. Tappin<sup>a</sup> (Dr), B. Catley<sup>a</sup> (Dr), K. Blackwood<sup>a</sup> (Dr), K. Bone<sup>a</sup> (Dr), D. Forsyth<sup>a</sup> (Dr), Z. Port<sup>a</sup> (Ms)

<sup>a</sup> Massey University, Auckland, NEW ZEALAND

\* t.a.bentley@massey.ac.nz

There is considerable evidence that psychosocial risks are a leading cause of lost-time from work and reduced levels of performance due to their influence on psychological wellbeing. Psychosocial risk factors include aspects of work organisation that are a result of human action and have the potential to cause psychological harm. Changes in the nature of work arising from technological advancement, globalisation, new ways of working and other workplace trends have potential to increase the risk of psychological harm to workers, while a growing proportion of workers are ageing, on insecure work contracts, or vulnerable due to a range of conditions that influence their susceptibility to psychosocial risk. Research indicates that New Zealand workers are highly vulnerable to psychosocial workplace problems, with high levels of job stress and workplace bullying placing in particular a considerable burden on the economic and social wellbeing of society. Recent longitudinal research from Australia has provided strong evidence of the high social and economic costs of a poor psychosocial work environment. The New Zealand Workplace Barometer (NZWB) is based on the Australian Workplace Barometer model, and is designed to provide longitudinal monitoring and surveillance of exposure to psychosocial risks among a large representative sample of New Zealand workers. The NZWB has been developed to examine the impacts of exposure to psychosocial risk (assessed through the measurement of psychosocial safety climate, alongside specific aspects of psychosocial risk) on important individual and organisational outcomes, notably: depression and mental health, psychological distress, sickness absence, performance and engagement. The study draws on psychosocial safety climate theory, the posits psychosocial safety climate as the preeminent antecedent of psychological health and safety outcomes, and the well-known job demands/resources model. Year one of the NZWB Programme was implemented via a quantitative on-line survey during 2018 across a large representative sample of nearly 1500 New Zealand workers drawn from 25 organisations and representing a broad range of occupational fields. The study involved industry participation through a membership scheme that provided access to organisational members for data collection and the provision of customised reports that allowed member organisations to benchmark with the national data and monitor their performance over time. Findings from structural equation modelling using the NZWB data indicate that psychosocial safety climate influences workplace demands and resources, as predicted, and these in turn are related to performance and wellbeing outcomes. Management competencies also appear to influence the presence of demands and resources in the work environment as well as being related to the performance and wellbeing outcomes of workers. Prevalence levels of relational psychosocial hazards, including workplace bullying, were somewhat lower than were found in previous New Zealand studies, while depression prevalence was markedly high. Detailed findings from the NZWB will be presented, including the role of key future of work trends on workplace wellbeing. Implications for policy and practice are also considered, and a discussion of the role organisations can play in the design of healthy and productive work.

## How was your day at work? Assessing motivation fluctuations at work using ecological momentary assessment

K. Hogenelst<sup>\*a</sup> (Dr), R. Schelvis<sup>b</sup> (Dr), K. Knittle<sup>c</sup> (Dr), M. Heino<sup>c</sup> (Mr), N. Hankonen<sup>c</sup> (Dr)

<sup>a</sup> The Netherlands Organisation for applied scientific research, TNO, Zeist, NETHERLANDS ; <sup>b</sup> The Netherlands Organisation for applied scientific research, TNO, Leiden, NETHERLANDS ; <sup>c</sup> University of Helsinki, Helsinki, FINLAND

\* koen.hogenelst@tno.nl

To understand and promote psychological well-being and productivity of workers, it is increasingly recognized to also take an individualized approach into account (1). This is also relevant when studying workers' motivation, job satisfaction and productivity. Indeed, while motivation is important for workers' functioning and organizations' productivity, workers vary considerably in their motivation to put effort in their job and motivation can stem from different sources. Research suggests that there are daily and weekly fluctuations in the quality of motivation (e.g. extrinsic vs intrinsic) and that each individual may have his or her own mix or 'profile' of (fluctuating) motivational qualities, which may predict their behavior (2). Research also shows that workers exhibit intra-individual differences (e.g. daily fluctuations) as well as inter-individual differences in job satisfaction (1). Though this may partly explain why group-level studies often report weak associations of job satisfaction to productivity (3), it is likely that personal characteristics (including motivation) also play an important role.

The present study utilizes developments in mobile technology (mobile ecological momentary assessment) as well as data analysis (multilevel modeling and time-series analysis) to investigate, at the individual (within-persons) level, to what extent self-reported motivation (or fluctuations therein) during a day or days (t) is a predictor of job satisfaction and productivity at a later time point (t+x), as well as the reverse temporal relation (i.e. to what extent self-reported productivity or job-satisfaction predicts motivation at a later timepoint).

Twenty white-collar workers with varying work tasks are included. They include individuals working in human resources and in consultancy. For six full working weeks (approximately 30 working days), the Ecological Momentary Assessment (EMA) app prompts participants to complete a brief 12 to 14-item questionnaire five times during each working day. The EMA prompts assesses participants' current work tasks, their self-determined motivation for that task (6 items; two for intrinsic motivation and one for integrated, identified, introjected and external motivational regulations), the extent to which that task fulfills their basic psychological needs (i.e. autonomy, competence, and relatedness) and how many persons they are working with on that task. Additional items, delivered variably throughout a single day's EMA prompts, will assess previous night's sleep, time since last break, self-motivational strategies used, and any question that a participant his/herself requested to add into the EMA prompts, as elicited during the intake interview. Job satisfaction and productivity are reported at the end of the day.

Using multilevel modelling and time series analysis, we will examine within persons, whether self-reported motivation (or fluctuations therein) during a day or days (t) is a predictor of job satisfaction and productivity at a later time point or points (t+1 or longer lags). In a similar fashion we will assess the reverse temporal relation. Elucidating these mechanisms at the individual level paves the way for personalized interventions, such as targeting different motivational aspects.

1. Xanthopoulou, D., Bakker, A. B., & Ilies, R. (2012). Everyday working life: Explaining within-person fluctuations in employee well-being. *Human relations*, 65(9), 1051-1069.
2. Martin, A. J., Papworth, B., Ginns, P., Malmberg, L. E., Collie, R. J., & Calvo, R. A. (2015). Real-time motivation and engagement during a month at school: Every moment of every day for every student matters. *Learning and Individual Differences*, 38, 26-35.
3. Bowling, N. A. (2007). Is the job satisfaction–job performance relationship spurious? A meta-analytic examination. *Journal of Vocational Behavior*, 71(2), 167-185.

## **Diversity awareness creates competitive advantages and equal opportunities - The new german check "Diversity-conscious companies"**

M. Niehaus\*<sup>a</sup> (Mr)

<sup>a</sup> Federal Institute for Occupational Safety and Health, Dortmund, GERMANY

\* niehaus.michael@buaa.bund.de

The society is more and more characterized by a diversity of different people, ways of life and forms of working. This is a new challenge for companies. Those who consciously include diversity can recognize new market segments and customer target groups and develop needs-oriented offers, perceive different perspectives and abilities of employees. These companies can offer them equal opportunities to promote motivation and satisfaction, activate employees for innovative developments.

Every company is always already diverse, but is this diversity used?

Diversity is often first of all a disturbance factor and means friction losses in operational processes, as there are always deviations from the standard: An employee does not understand the task properly due to language difficulties, an older employee can no longer perform the full physical performance, team meetings are hardly possible due to the different working time models. These examples show that diversity is not an aim in itself, but that it is important to consciously think about and include diversity in all operational processes. Only in this way the personal strengths and weaknesses of employees and their own individual perspectives and skills can be integrated into the value creation process.

By diversity we mean the diverse perspectives and abilities of employees in the company. These perspectives and skills are created by combining various visible and invisible features and dimensions (intersection). These are, for example, age, gender, sexual orientation/identity, disability (physical and/or psychological abilities), ethnic origin and nationality, religion and ideology. Diversity in the world of work also includes the social situation/origin, qualifications, appearance, lifestyles and values, as well as the different employment relationships or positions and roles in which the employees work.

With the check "Diversity-conscious enterprise" #1 of the "Initiative New Quality of Work" #2, an awareness of diversity can be established in the enterprise. The practice-oriented tool supports companies in promoting and sustainably using the potentials offered by a diverse workforce.

The check does not start with the classical dimensions of diversity, but is oriented towards the central business processes. The aim for companies is to be able to include the different perspectives and skills of their employees in their operational processes. As a component of corporate strategy, leadership behaviour, personnel work, work organisation and corporate culture, diversity can become an issue that is taken into account in everyday decisions and actions by all those involved in the company.

In summary it can be said that the check makes the existing diversity visible. As we have seen in previous experiences in companies in Germany, using the self-assessment check sensitises company management and provides information on very concrete design options in various company processes.

This contribution would like to firstly present the concept of the check, then report the experiences made in Germany and finally discuss the possibilities of transferring it to other European countries.

1. <http://www.inqa-check-diversity.de/check-diversity/daten/mittelstand/index.htm>
2. <https://www.inqa.de/EN/Home/home.html>



## **The European programme FOOD (Fighting Obesity through Offer and Demand): focus on healthy eating habits promotion in the workplace.**

N. Bertrand<sup>a</sup> (Mrs), R. Leaute<sup>\*a</sup> (Ms)

<sup>a</sup> Edenred S.A., Brussels, BELGIUM

\* romane.leaute@edenred.com

According to the 2017 WHO's study *Assessing the economic costs of unhealthy diets and low physical activity*, an employer loses on average 11 days of productivity per worker and per year due to poor health.

The main objective of the FOOD programme is to promote healthy eating during the working day towards two complementary target groups: workers and commercial restaurants, making the healthy choice more obvious and more accessible.

The FOOD programme is a public-private consortium gathering representatives of Public Health Authorities, Nutritionists and Universities around the lead partner and coordinator Edenred in Austria, Belgium, Czech Republic, France, Spain, Italy, Portugal, Slovakia and more recently Romania (who joined in 2018).

To meet its objectives, the Consortium followed a five-step methodology with a strong evaluation, enabling a qualitative and adapted set of actions. After a phase of analysis of the needs, communication tools were created to provide practical advice and recommendations to encourage healthy eating habits among the workers.

Most of the communication tools are now digitalized. For instance, a MOOC was launched in 2016 in Portugal because the demand for workplace workshops was too high. 4,000 trainees attended the 4 weeks long course on healthy food, entitled "Eat better, save money".

Since 2009, 380 communication tools have reached 5 million employees, 185,000 companies and 352,000 restaurants. They are all downloadable for free on the European FOOD website.

A network of restaurants adhering to the FOOD recommendations was also created: it gathered 3,600 members in 2017.

Providing accessible and understandable information for all is key for the FOOD programme. It enables the target groups to make better choices for their health, and strongly empowers them.

In order to go further in the promotion of balanced nutrition at the workplace, interactive workshops have been developed and held directly in companies' worksites.

In Belgium, they include 2 practical sessions with a nutritionist (cooking workshops, speed coaching and tips about healthy diets) and are framed by surveys enabling to evaluate their impacts on employees' eating habits.

In Portugal, the workshops' actions are based on a Guide entitled "Smart Food - Eat Well and Save More".

In the Czech Republic, the 6 workshops organised in 2017 linked nutritional recommendations to physical activity promotion.

Returns from the workshops proved them to be very effective in raising employees' awareness on balanced nutrition, thanks to an interactive approach. It rose participants' consciousness and encouraged them to improve their daily diet.

Therefore, dedicated communication tools and workplace interventions play an important role in prevention, as employees spend the major time of their waking hours at work. With simple messages and an efficient methodology, the activities of the FOOD programme are adapted to the diversity of companies and to their employees, and meet the challenges of healthy eating promotion in the workplace.

1. Food at work, Christopher Wanjek, ILO study, 2005

2. Creating Healthy Workplaces: Stress Reduction, Improved Well-Being and Organizational Effectiveness, Caroline Biron Ronald J. Burke and Cary L. Cooper. Published by Gower Applied Research, Surrey, 2014



## Socio-economic inequalities in worksite health promotion: an individual participant data meta-analysis

P. Coenen<sup>\*a</sup> (Dr), K. Oude Hengel<sup>b</sup> (Dr), S. Robroek<sup>b</sup> (Dr), C. Boot<sup>a</sup> (Dr), A. Van Der Beek<sup>a</sup> (Prof), F. Van Lenthe<sup>b</sup> (Prof), A. Burdorf<sup>b</sup> (Prof)

<sup>a</sup> Amsterdam UMC, location VUmc, Department of Public and Occupational Health, Amsterdam, NETHERLANDS ; <sup>b</sup> Erasmus University Medical Center, Department of Public Health, Rotterdam, NETHERLANDS

\* p.coenen@vumc.nl

**Background:** Obesity and unhealthy lifestyle behaviours (e.g., physical inactivity, smoking, alcohol use and unhealthy dietary intake) are more prevalent among workers with a low compared to a high socio-economic position. Worksite health promotion aims to prevent obesity and unhealthy behaviours by providing interventions through the worksite. Earlier research has indicated differential effectiveness of such interventions among workers across various socio-economic groups. This raises the question whether healthy lifestyle interventions in the occupational setting reduce or increase socio-economic health inequalities. The current study aims to assess socio-economic inequalities in the effectiveness of worksite health promotion and to study potentially underlying factors of socio-economic inequalities in obesity and unhealthy behaviour.

**Methods** A systematic search was conducted in electronic databases including Embase, Medline Ovid, Web of Science, Cochrane Central and Google Scholar as well as in grey literature and trial registries to search for published and unpublished studies investigating the effectiveness of lifestyle interventions in the occupational setting in the Netherlands. Two researchers independently selected relevant studies and identified 33 studies. Principal investigators of these studies were contacted and asked to share their individual participant data. The data of the intervention studies were pooled in an individual participant data (IPD) meta-analysis.

**Results:** Out of the 33 studies that were found eligible for our IPD meta-analysis, researchers from 19 studies (with 8,914 participants) have agreed to share their individual participant research data with us. Researchers from 14 studies were not (yet) able to share their data with us, in most cases because the researchers did not have access to the data. The 19 included studies consist of a total of 14 (cluster) randomized trials and five non-randomized trials, with follow-up periods ranging from 4 weeks to 24 months. In these 19 studies, interventions were tested among workers from various sectors, with both blue and white collar workers from small and large companies. Interventions consisted of counselling, health education and environmental components. These elements were provided face-to-face, on paper or in e-health modules, either on an individual level or group level. Socio-economic status was typically expressed in education level. Measurements of the following outcomes were available: body composition (body weight, BMI, waist circumference, fat percentage) and healthy behaviour (physical activity, smoking, alcohol use, and diet). The majority of the studies also provided process evaluation data, in terms of compliance and reach of the intervention.

**Discussion:** We have composed an IPD meta-analysis dataset from Dutch worksite health promotion intervention studies. With this dataset we will analyse socio-economic inequalities in the effectiveness of worksite health promotion and study potentially underlying factors of potential socio-economic inequalities (such as population characteristics, organizational work environment, working conditions and intervention characteristics). Results of these analyses are expected to be available at the Wellbeing at Work conference. Results of our meta-analysis will contribute to answering the call of researchers, policymakers and employers as to which and how worksite health promotion interventions should be implemented to reduce socioeconomic health inequalities in the working population.

## **Why enterprise and employees are together winners to think about life habits: an experiment in MAGNA GETRAG FORD Transmissions , or how to build a health culture in the enterprises.**

H. Jakubiec\*<sup>a</sup> (Dr)

<sup>a</sup> MAGNA GETRAG-FORD Transmissions GmbH, Blanquefort, FRANCE

\* Henriette.Jakubiec@magna.com

Employers and employees are both impacted by poor life habits. Addictions (mainly alcohol, tobacco, cannabis), nutritional habits, sleep disorders, lack of physical activities, and more generally a bad health are an issue for both of them

A bad health of his employees is often a sign of a potential bad health of an enterprise. Of course some acute situations are difficult to manage : how to cope with an alcoholic intoxication, a heart attack? The enterprise is never ready for that. Other impacts can occur in a more ordinary way, absenteeism and work related accidents increase. The global results of the enterprise is also impacted: how to produce in quantity and quality if the employees are away or in bad health at work? The social climat is also concerned: in the beginning, the colleagues protect their fellow workers, but very soon they get tired to support repeated absenteeism, lateness, tolerated absences for smoking outside. But the enterprise imposes also working conditions that can impact the workers health: the noise, the work shift pattern, manual handling...It's why in Magna Getrag Ford Transmissions Bordeaux plant (1100 workers in the automotive sector) several health campaigns are initiated. One of them about tobacco was conducted by a steering committee composed only by smokers: they choosed themselves the messages they thought was effective for giving them the envy to stop . They deliberately ignored the alarming health warnings and, supported by all the plant and the help of the former smokers, selected a motto: 'I choose the pleasure": of beeing free, of rediscovering the pleasure of taste etc...

For the employees, they find a way to be respected in their ambivalence about their life habits. The several public health campaigns multiply the injonctions : don't drink, don't be fat, don't be too thin: the reaction can be provocative "I have still the right to smoke!". But respected and supported by their colleagues in collective expression groups they can find the occasion to express their issues, and to make change and adapt the health messages. The participants are not anymore victims of their bad habits, but also builders of their therapy : each one finds in the other working partners the ressources he needs, and discovers that he can himself be a support for the participants. Besides, because they work together, they can experiment this help inside the plant, even outside the support groups, and build a community in which each one with the others is stronger. Thus, the result of this tobacco campaign was exceptionally good: 40% of durable non smokers one year after the end of the campaign.

A lot of other examples can be found. In the enterprise, and with the help of the occupational health practionner, nurses and external partners (ANPAA, IREPS...), the employees find the way to rebuild new health messages they can hear because they have been made for them and by them. A real health culture can be deployed, and employees are the first ones to propose new thema to develop.



22·23·24  
**MAY** 2019  
PARIS ISSY-LES-MOULINEAUX



**Wellbeing**  
at work in a changing world:  
CHALLENGES AND OPPORTUNITIES

perosh  
PERFORMANCE EVALUATION RESEARCH  
ORGANISATIONAL SAFETY AND HEALTH

inrs  
Institut National de Recherche et de Sécurité



© Eva Mäntylä/INRS

# Friday, 24<sup>th</sup>

**09:50 – 11:20**

**PARALLEL SESSIONS**

**p. 114 – p. 130**

Auditorium

**SYMPOSIUM: “An integrated approach to workplace mental health: Illustrative examples of promoting positive mental health and wellbeing across diverse occupational settings”**

Room Molière

**ORAL COMM: Burnout and suicides**

Room 9

**ORAL COMM: Long working hours and breaks from work**

Room 5

**ORAL COMM: Harassment and conflicts at work**

**11:50 – 12:50**

**PARALLEL SESSIONS**

**p. 131 – p. 139**

Auditorium

**ORAL COMM: Coping with digitalisation and hyperconnectivity**

Room 5

**ORAL COMM: Physical health and activity**

Room 9

**ORAL COMM: Intervention and integrated approaches for health**

## **An integrated approach to workplace mental health: Illustrative examples of promoting positive mental health and wellbeing across diverse occupational settings.**

KE. Elliott\*<sup>a</sup> (Dr), S. Dawkins<sup>a</sup> (Dr)

<sup>a</sup> University of Tasmania, Hobart, AUSTRALIA

\* KateEllen.Elliott@utas.edu.au

### **Rationale and goal of the symposium**

This symposium will describe priorities for implementation of an integrated approach to workplace mental health developed by the University of Tasmania's Work, Health & Wellbeing Network in collaboration with national and international researchers, practitioners and policy makers (Martin et al., 2017). An integrated approach to workplace mental health seeks to simultaneously prevent work-related harm, to promote the positive aspects of work, and to manage mental illness as it manifests in the workplace. Of these three key areas, promoting the positives is the newest priority for implementation. The collection of presentations will contribute to further understanding of this priority. Speakers will describe assessment methods, intervention designs, and health and economic outcomes from intervention trials that apply positive-based approaches to enhance workplace mental health and wellbeing. Intervention strategies described will include a focus on the psychological strengths and resources of individuals and teams, and alternate modes of intervention delivery. Collectively, the presentations will offer new insights into positive-based approaches for promoting workplace mental health and wellbeing, and importantly, provide evidence-based practices that respond to the rapidly changing nature of work.

### **Format**

The Co-Chairs will provide an overview of the symposium and introduce the speakers and their papers (5 minutes). Each of the four topics will be presented by speakers in 15 minutes and this will allow time for a discussant plenary (20 minutes) and a five minute buffer for transitions between the papers. The plenary discussion will allow for questions, comparing and contrasting findings of the studies presented and coming together with the audience to highlight future research challenges and opportunities.

### **Speakers and presentation title\***

Angela Martin & Emma Warnecke - Co-production process and outcomes for knowledge translation in workplace mental health.

Larissa Bartlett - Organisational outcomes from a randomized controlled trial of app-based mindfulness training in a diverse and distributed Australian public sector workforce.

Sarah Dawkins - Evaluating the impact of a team-level Psychological Capital intervention for enhanced performance and wellbeing.

Kate-Ellen Elliott - Assessing Occupational Communion and the implications for building resilience in the aged and dementia care workforce.

\*Note: All speakers have agreed to participate and register and each abstract has been individually submitted.

1. Martin, A., Sanderson K., Warnecke, E., Dawkins, S., Bartlett, L., et al. (2017). An integrated approach to workplace mental health: Nine priorities for implementation in Australia. University of Tasmania, Australia. Retrieved 17 August, 2018, from [http://www.utas.edu.au/\\_\\_data/assets/pdf\\_file/0008/972395/WHW-Network-White-Paper.pdf](http://www.utas.edu.au/__data/assets/pdf_file/0008/972395/WHW-Network-White-Paper.pdf)

## Co-production process and outcomes for knowledge translation in workplace mental health.

A. Martin<sup>\*a</sup> (Prof), E. Warnecke<sup>b</sup> (Prof), K. Sanderson<sup>c</sup> (Prof)

<sup>a</sup> Pracademia, Hobart, AUSTRALIA ; <sup>b</sup> University of Tasmania, Hobart, AUSTRALIA ; <sup>c</sup> University of East Anglia, Norwich, UNITED KINGDOM

\* angela.martin@utas.edu.au

There is international momentum to improve workplace mental health through integrated strategies that incorporate primary prevention as well as promoting positive approaches and supporting individuals (LaMontagne et al, 2014). The goal of the project we will present on was to produce a national Action Plan for workplace mental health in Australia, collectively authored by participants in a white paper format - a solutions-focused position paper that succinctly captures a problem and proposes a range of concrete actions.

A 1.5 day meeting with invited participants representing a broad mix of stakeholders including worker health/OHS advisors, HR managers, national and state OHS regulatory bodies, clinicians, policy makers, industry representatives, non-government organisations, academics, and researchers was convened. Participants nominated, discussed and voted on priorities for action using *Art of Hosting* methodology supported by an online brainstorming tool. Three x 1-hour breakout sessions were held for each of the 3 themes of *preventing harm*, *promoting the positive*, and *responding to illness*, where participants had the opportunity to cycle through all three theme areas and contribute ideas in small groups of 5-6 people. A narrative review collated actions and each group selected the top three actions. These 9 actions per theme were then voted on in a subsequent session to identify 3 leading priority actions per theme. Members of the research team then hosted working groups for each of the 9 top priorities to develop implementation strategies that incorporated: stakeholders, resources, outcomes, and time frames.

Nominated actions and strategies were collated across the three theme areas and voting processes were used to finalise 3 priorities for each theme. The voting process produced 9 priority actions for each theme, and implementation strategies were mapped out for each of these actions. The priorities action list and implementation agenda was formulated as a white paper that was generated by a wide range of stakeholders. This gives practical legitimacy for research translation strategies and is thus likely to facilitate wide readership and uptake. The white paper content may be of relevance to other countries/regions and the process described here may also be of use to those seeking to undertake co-production processes to establish priorities for implementation.

A priority list of actions with implementation strategies was able to be generated and collectively owned over a very short time-frame. This methodology has potential for application to inform priority actions for other areas of workplace health and safety, with ownership by diverse stakeholders. Attempts to trace the impact of the paper since its publication in early 2017 have shown three major Australian mental health promotion organisations adopted and promoted it to their very large groups of stakeholders. This also created several opportunities to present to diverse audiences including police organisations, corporate leaders' breakfasts in several locations, finance industry workshops and work rehabilitation associations. Citation of the document is also beginning to appear in government and corporate publications and codes of practice. It has also been promoted internationally through the International Initiative for Mental Health Leadership.

1. LaMontagne AD, Martin A, Page KM, et al. Workplace mental health: Developing an integrated intervention approach. BMC Psychiatry. 2014;14(1).

## **Organisational outcomes from a randomized controlled trial of app-based mindfulness training in an Australian state-wide public sector workforce.**

L. Bartlett<sup>\*a</sup> (Ms), K. Sanderson<sup>b</sup> (Prof), M. Kilpatrick<sup>a</sup> (Dr), P. Otahal<sup>a</sup> (Mr), A. Martin<sup>c</sup> (Dr), A. Neil<sup>a</sup> (Dr)

<sup>a</sup> Menzies Institute for Medical Research, University of Tasmania, Hobart, AUSTRALIA ; <sup>b</sup> Faculty of Medicine and Health Sciences, University of East Anglia, Norwich, UNITED KINGDOM ; <sup>c</sup> Tasmanian School of Business and Economics, University of Tasmania, Hobart, AUSTRALIA

\* larissa.bartlett@utas.edu.au

**Background:** Mindfulness training (MT) is increasingly popular in workplaces to help employees better manage stress. However, there are time and geographic feasibility challenges for class-based MT at work, and 'low dose' interventions that use smart phone applications (apps) have become increasingly available. Despite growing in popularity and use, the efficacy of mindfulness apps in the workplace is unclear. Similarly, the retention of any effects beyond the intervention period is uncertain, as to date few longer-term evaluations have been published. This paper will present results for employee and organizational outcomes from a randomized controlled trial (RCT) of an app-based MT program with six and 12-month follow-up. Procedural and contextual factors, such as adherence to training and the influence of seminars will be discussed.

**Method:** A three-arm parallel group RCT was conducted in an Australian public-sector workforce, using the ten-week, app-based Smiling Mind Workplace Program (SMWP). Eligibility criteria comprised current employment and line manager approval, and participants were screened for contraindicating mental health conditions. Participation in Group 1 involved self-guided use of the SMWP App supported by four hour-long seminars. Group 2 participants used the SMWP App without the supporting seminars. After Groups 1 and 2 completed training, wait-list control (WLC) participants (Group 3) attended an introductory two-hour seminar and progressed self-guided through the SMWP App. The primary outcome was perceived stress. Secondary outcomes were mindfulness, psychological distress, psychosocial job quality indicators (demand, control and support), productivity and quality of life. Data were collected via online surveys at baseline, post-intervention, and six- and 12-month follow up. User data from the SMWP app server and seminar attendance reports were used to measure adherence. Group by time effects for outcome measures were assessed using maximum likelihood linear mixed models. The cost effectiveness of the intervention was assessed using program costs, observed changes in productivity and health-related quality of life at 12-month follow-up. External effects were explored using measures of observed mindfulness and organizational citizenship reported by participant-nominated observers.

**Results:** Employees who expressed interest in the training and research (n=285) were invited to complete the baseline survey, with 211 assessed eligible. Preliminary results from post-intervention data did not show significant results for either intervention group for perceived stress. A moderate positive effect was observed for psychological distress (Cohen's  $d=0.40$ ) and mindfulness ( $d=0.49$ ) for participants in the App+ group. Economic, quality of life and psychosocial indicators will be reported using 12-month follow-up data and procedural and contextual considerations derived from analyses of qualitative data will be used to interpret findings.

**Discussion:** This research is the first known study to investigate the efficacy of workplace-delivered app-based MT for reducing employee stress. It also provides an exploration of dose and mode of delivery for workplace MT. Preliminary findings suggest the inclusion of seminars realized incremental benefit immediately after training compared with self-guided app use. Whether participant-reported changes are retained over time and the economics of different modes of training delivery will be discussed.



## Evaluating the impact of a team-level Psychological Capital Intervention for enhanced performance and wellbeing.

S. Dawkins<sup>\*a</sup> (Dr), A. Martin<sup>a</sup> (Prof), M. Quinn<sup>a</sup> (Dr)

<sup>a</sup> University of Tasmania, Hobart, AUSTRALIA

\* sarah.dawkins@utas.edu.au

Psychological Capital (PsyCap) reflects an individual's positive psychological state of development characterized by hope, efficacy, resilience and optimism (Luthans, Avey, Avolio & Peterson, 2010). Empirical and meta-analytic evidence suggests that PsyCap is not only an important predictor of job performance, but also promotes psychological well-being (Avey, Reichard, Luthans & Mharte, 2011). Emerging intervention studies have also shown PsyCap is developable through relatively brief training interventions and that increases in PsyCap are associated with improvements in individuals' performance and functioning (Luthans, et al., 2010).

More recently, multilevel research has demonstrated positive associations between team PsyCap and both individual- and team-level outcomes (Dawkins, Martin, Scott, Sanderson & Schuz, 2018). This suggests that team PsyCap not only enhances team performance and functioning, but also individual employee functioning. These findings highlight the potential multilevel benefits from interventions aimed at bolstering team PsyCap, which could positively impact both team and individual employee functioning.

This study aims to evaluate the feasibility and efficacy of a team-level PsyCap intervention (tPCI) designed to promote team- and individual-level PsyCap. Outcomes pertinent to team and employee functioning will also be assessed, including, team satisfaction and performance and individual employee well-being and commitment. Based on extant PsyCap research, the study seeks to investigate the following hypotheses:

*Hypothesis 1:* The tPCI will have a positive effect on team-level PsyCap.

*Hypotheses 2:* By enhancing team-level PsyCap, the tPCI will have distal positive effects on team-level outcomes, including performance and satisfaction.

*Hypothesis 3:* The tPCI will have a positive cross-level effect on individual-level PsyCap.

*Hypothesis 4:* By enhancing team-level PsyCap, the tPCI will have distal positive effects on individual-level outcomes, including employee well-being and commitment.

The tPCI has been adapted from the existing and validated individual-level PsyCap intervention (PCI; Luthans et al., 2010). Specifically, the tPCI is a 3.5-hour training workshop that involves a series of team-based exercises specific to each individual component of PsyCap (hope, efficacy, resilience and optimism), along with more integrative reflective exercises which are aimed at incorporating the development of the individual component training into an understanding and operationalisation of overall PsyCap.

Approximately 20 work teams (10 active teams; 10 control teams), comprising a minimum of three employees, will be recruited from a cross-section of industries within Australia to participate in this study. Online surveys will be implemented to assess individual and team-level PsyCap, team performance and satisfaction, employee wellbeing and organizational commitment one week prior to the intervention, and again two weeks post intervention.

It is anticipated that the findings from this study will demonstrate the feasibility and efficacy of the tPCI and highlight the importance of fostering team PsyCap, not only to enhance team-level outcomes, but also outcomes at the individual-level, employee wellbeing. This, in turn, could offer further implications for organisations in terms of providing greater return on development investment (RODI) in comparison to interventions focused solely on developing individual-level PsyCap.

1. Avey, J. B., Reichard, R. J., Luthans, F., & Mharte, K. H. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human Resource Development Quarterly*, 22, 127–152.

2. Dawkins, S., Martin, A., Scott, J., Sanderson, K., & Shüz, B. (2018). A cross-level model of team-level Psychological Capital (PsyCap) and individual- and team-level outcomes. *Journal of Management and Organizations*. Advance online publication. doi: 10.1017/jmo.2018.27

3. Luthans, F., Avey, J. B., Avolio, B. J., & Peterson, S. (2010). The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly*, 21, 41–66.

## **Assessing occupational communion and the implications for building resilience in the aged and dementia care workforce.**

KE. Elliott<sup>\*a</sup> (Dr)

<sup>a</sup> University of Tasmania, Hobart, AUSTRALIA

\* KateEllen.Elliott@utas.edu.au

Occupational communion (OC) is a sense of belonging based on social interaction at work, essential for positive coping with job demands. The OC construct extends five decades of social psychology theory on communion (Bakan, 1966), which refers to a person's desire to closely relate to, co-operate and merge with others. Occupational communion was first identified from qualitative data on aged and dementia care workers job roles and adjustment to their care work (Elliott et al., 2013). It was found to include a sense of happiness and positivity in workers to participate in job tasks that are inherently based in interpersonal relationships. Dementia care workers were motivated to stay in their jobs when they had rewarding relationships at work with their clients and co-workers. Care workers coped with the high job demands of seeing their clients deteriorate over time. They could better manage dealing with their grief and loss because the workers felt, they 'mattered to the people they cared for'. They also felt positive emotions when they advocated for their clients' needs, despite low wages and feeling undervalued. A measurement model has been tested resulting in the development of a self-report questionnaire called the Occupational Communion Scale. It is multidimensional and includes factors of natural caring qualities, a psychological need to care, connections with clients and coworkers, as well as needs for professional communication and to balance boundaries. Preliminary assessment shows good fit to the measurement model and there is good predictive validity for a range of occupational health and wellbeing outcomes. This presentation will introduce and describe the construct of occupational communion, and how it relates to other key organisational health and wellbeing factors. A summary of several key studies will be provided to examine the relevance of occupational communion to inform strategies for building resilience in the aged and dementia care workforce. The implications for positive-based workforce development interventions, and the potential for the translation of occupational communion to other job roles within and outside health and social care settings, will be discussed.

1. Bakan, D. (1966). *The Duality of human existence: Isolation and Communion in Western Man*. Chicago: Rand McNally.
2. Elliott, K. J., Stirling, C. M., Martin, A. J., Robinson, A. L., & Scott, J. L. (2013). Perspectives of the community based dementia care workforce: "Occupational communion" a key finding from the Work 4 Dementia Project. *International Psychogeriatrics*, 25(5), 765-774.

## The impact of workplace social capital on burnout and work engagement: a longitudinal study

E. Clays<sup>\*a</sup> (Prof), P. Vlerick<sup>b</sup> (Prof), B. Van De Ven<sup>b</sup> (Dr), L. Braeckman<sup>a</sup> (Prof), B. De Clercq<sup>a</sup> (Dr), H. Janssens<sup>c</sup> (Dr)

<sup>a</sup> Ghent University, Department of Public Health and Primary Care, Ghent, BELGIUM ; <sup>b</sup> Ghent University, Department of Personnel Management, Work and Organizational Psychology, Ghent, BELGIUM ; <sup>c</sup> Liantis Occupational Health

Services, Bruges, BELGIUM

\* els.clays@UGent.be

**Introduction.** The concept of workplace social capital - referring to the shared values, attitudes, and norms of trust and reciprocity facilitating collective action in the work unit - has been related to several occupational health related outcomes. However, although many studies have investigated antecedents of burnout, the particular impact of social capital on burnout has not been thoroughly investigated using longitudinal designs. Moreover, it is suggested that attention should not only go out to negative loaden work outcomes (e.g. burnout) but also to positive work outcomes (e.g. work engagement) and how these can be promoted among employees. Therefore, the aim of this study was to investigate the longitudinal relation of workplace social capital with both burnout and work engagement.

**Methods.** We conducted a two-wave survey study in a company in the energy sector in Belgium. A total of 473 workers completed a self-administered questionnaire at baseline and one year later. Social capital was measured with an instrument based on a Finnish 8-item scale, assessing both its structural and cognitive elements. The UBOS-A instrument was used to assess separately the three core dimensions of burnout, i.e. emotional exhaustion, distance or depersonalization, and diminished feelings of competence or personal accomplishment. Work engagement was measured with the UWES questionnaire, also including three core components, i.e. dedication, absorption and vigour. Multiple linear regression analyses were used to assess the relation between social capital and burnout or work engagement one year later.

**Results.** The sample of 473 participants included primarily male workers (7% female); mean age was 46 years (SD 10.5). Response rates of 24% and 17% were attained at baseline and at follow-up, respectively. After adjusting for age, sex and educational level, significant relations were observed between workplace social capital at baseline and all dimensions of burnout and work engagement one year later. A higher level of social capital was associated with lower scores of burnout and higher scores of engagement. When further adjusting for the respective baseline level of the burnout or work engagement dimension, only the relation of workplace social capital with the burnout dimensions of distance and competence remained statistically significant.

**Conclusion.** These findings provide evidence for the lagged relation of workplace social capital with the distance and competence dimensions of burnout, implying that organizational strategies enhancing social interaction and as such enabling to increase the levels of support, reciprocity, sharing and trust among workers, could play a crucial role in the prevention of burnout. However, the relations with emotional exhaustion, and all components of work engagement, did not remain significant after adjustment for baseline levels of the outcome variable, suggesting that these particular well-being indicators might be more stable or less malleable through workplace social capital. These results illustrate the need for opting for a longitudinal research design when investigating employees' well-being through survey studies. Further research deepening the lagged effects of (changes in) workplace social capital on employees' (un)well-being is needed as well.

## Job stress and burn-out among Icelandic social workers

S. Hrafnisdóttir\*<sup>a</sup> (Prof), á. Snorradóttir<sup>a</sup> (Prof)

<sup>a</sup> University of Iceland. School of Social Sciences, Reykjavík, ICELAND

\* steinhra@hi.is

Social workers have in previous research been identified as being at risk of developing stress and burn-out (Barak, Nissly og Levin, 2001; Kim, Ji og Kao, 2011; Lloyd, King og Chenoweth, 2002; McLean, 1999). In Iceland there is a lack of systematic research on the subject. However, the few research on stress- and burnout amongst Icelandic social workers confirm high levels of stress and burn-out. This has been related to increasingly challenging work-environment, high case loads, rising demands and inadequate resources (Hrafnisdóttir, 2004, 2012; Kristófersdóttir, 2012). It is known that high levels of stress can result in serious health issues such as burn-out, depression, retention and high levels of sickness absence (Gilse, Ahlborg og Jonsdottir, 2012).

This study examines stress and burn-out among all qualified social workers in Iceland seeking to analyse risk-factors contributing to stress, the main predictors and causes of stress and burn-out and which groups of social workers are at risk of developing burn-out. A mixed methodology was applied, using an online survey and followed up with semi-structured interviews in three focus groups.

In this presentation the result of the online-survey will be presented and discussed in the light of of international research literature on occupational stress.

1. Barak, M. E. M., Nissly, J. A., & Levin, A. (2001). Antecedents to retention and turnover among child welfare, social work, and other human service employees: What can we learn from past research? A review and metanalysis. *Social Service Review*, 75(4), 625-660. doi:10.1086/323166
2. Kim, H., Ji, J., & Kao, D. (2011). Burnout and physical health among social workers: A three-year longitudinal study. *Social Work*, 56(3), 258-268.
3. Steinunn Hrafnisdóttir. (2004). *The Mosaic of gender: The Working environment of Icelandic social service managers*. Reykjavík: University of Iceland Press.

## Evolution of burnout in Belgian companies

H. Verlinden\*<sup>a</sup> (Ms)

<sup>a</sup> Securex, Leuven, BELGIUM

\* heidi.verlinden@securex.be

### Introduction

Burnout has gained relevance over the years, having various costs for employers and employees. Employee physical and psychological health are detrimental to organizational well-being and productivity. This study investigates the evolution of burnout from 2014 to 2017 answering some of the following research questions: Is burnout something we need to be worried about? Which groups have a higher risk for burnout?

### Methods

Data was gathered using online questionnaires for a bi-yearly benchmark study by Securex. The burn-out questionnaire was based on the Utrecht's Burnout Scale (UBOS), a Dutch equivalent of the most commonly used burnout scale: Maslach Burnout Inventory (MBI). Burnout was defined as a syndrome with three symptoms: exhaustion, mental distance, and decreased self-esteem or impaired emotional control. Further, our sample in 2017 contained 1,552 Belgian employees, 914 being white collar employees. The sample was representative for sex, age, status (blue-collar vs white-collar), and region on the Belgian labor market. Our sample in 2017 contained 526 Belgian white collar employees and was representative for sex and age. The fact that the sample was not representative for region does not affect these results, because the regions do not differ significantly in terms of symptoms of burnout.

### Results

In the last three years, the risk for burnout has increased by about 70% among Belgian white collar employees. In 2017, this risk was especially high for employees between the age of 35 and 39. In addition, full-time employees had a higher risk for burnout than part-time employees. White collar and blue collar workers had an equal risk for burnout.

### Conclusions

Burnout is becoming an increasingly important challenge for employers and employees. Possible explanations are given for the results, as well as some advice on tackling burnout.

## Burnout and the burden of care among home-care personnel

A. Lindahl Norberg<sup>\*a</sup> (Dr), I. Måhlqvist<sup>b</sup> (Ms), M. Alderling<sup>b</sup> (Mr), A. Lundin<sup>a</sup> (Dr), L. Hillert<sup>a</sup> (Dr), M. Forsman<sup>a</sup> (Prof)  
<sup>a</sup> Karolinska Institutet, Stockholm, SWEDEN ; <sup>b</sup> Centre for Occupational and Environmental Medicine, Stockholm, SWEDEN

\* Annika.Lindahl.Norberg@ki.se

### Background

Excess demands can lead to burnout, predominantly among people who work with people, that is social workers, hospital doctors, teachers and similar. This has been shown in numerous studies during the past decades. A risk factor for burnout is experiencing that the resources at work do not correspond to the demands, specifically, experiencing limited resources to meet the needs of clients, and yet being the person in the frontline, facing the clients and their needs. One of the professions particularly exposed to this risk factor is home-care personnel, who, often alone, support clients, who may have both physical and psychological needs, in the client's own home. Home-care personnel typically have low education - as well as low social status and low wage - and at the same time they are expected to make difficult decisions in a sometimes unpredictable, minute-based scheduled working day. Their work demands are mainly seen as physical, although the psychological aspects may be considerable. The aim of the present study was to examine the association between client related burnout, and physical and psychological demands, respectively, in a Swedish sample of home-care personnel.

### Methods

In a cross-sectional study, employees at selected Swedish home-care providers (n = 469) completed a questionnaire on work environment and mental and physical health.

The *Client-related burnout* dimension from the Copenhagen Burnout Inventory (CBI) was used to assess self-reported burnout specifically related to the person's work with clients. A score of 18 or more was indicative of burnout.

A *psychological demands* index was created including four questions regarding competing demands (from e.g. clients/ their relatives/ supervisor/ oneself); handling unexpected events; promptly making difficult decisions (by oneself); and whether the responsibility for the clients feels overwhelming. The result from the four questions was multiplied by the proportion of clients with dementia and/or mental health problems within the responsibility of the respondent (none; a few; several, i.e. factors 0; 1; 2).

Similarly, a *physical demands* index was created from five questions relating to heavy lifting or carrying; other heavy work; assisting in shower or toilet with limited space; awkward work positions; and sudden, unexpected physical efforts - multiplied by the proportion of clients with physical health problems.

The *psychological* and *physical demands* indexes were dichotomized through median split.

### Results

Client-related burnout was reported by 15% of the respondents. Those who reported client related burnout also reported psychological demands at a significantly higher level. Level of physical demands did not differentiate between respondents with and without client related burnout.

### Conclusion

The findings indicate that home-care personnel may be at risk for burnout, particularly those facing high levels of psychological demands. Work should be organized to minimize those demands, e.g. through clearly defined responsibility, and professional supervision and support in daily tasks and dilemmas. Physical demands may indeed implicate a health risk, however, in this study there were no sign of them increasing the risk for burnout in home-care personnel.



## Long working hours and occupational health: Towards a knowledge agenda

C. Wessels<sup>\*a</sup> (Dr), P. Krauss-Hoffmann<sup>a</sup> (Dr), K. Seiler<sup>a</sup> (Dr)

<sup>a</sup> Landesinstitut für Arbeitsgestaltung des Landes Nordrhein-Westfalen (Institute for Work Design of North Rhine-Westphalia), Bochum, GERMANY

\* Christina.Wessels@lia.nrw.de

The number of hours each individual works every day is a highly controversial topic. Working hours have a major impact on employee's daily lives as they determine the structure of the day, influence work-life balance and the standard of living. At the same time, they are of equal concern to employers as to cost calculations and competitiveness (Eurofound, 2009). Unsurprisingly, the maximum number of working hours is a fervently debated topic among employers, trade unions, and policy makers as extended working hours bear the risk of being a potential occupational hazard (see Ganster et al., 2018). While the European Union's Working Time Directive (2003/88/EC) prescribes a limit to weekly working hours and a minimum daily rest period, in many European countries, such as Germany or Austria, parties call for adjustments in the national law to allow for a more flexible creation of one's working day. For instance, in Germany, the liberal party has made an attempt to abandon the 8 hour work day in favor of a weekly limit of 48 working hours without an obliged rest period of 11 hours every 24 hours. Opponents of such proposals fear that this will lead to longer working hours and thus bears detrimental effects for health outcomes.

Research about the influence of long working hours on occupational health is abundant and the dominating view is indeed rather negative; numerous studies have shown that long working hours adversely impact mental and physical health (e.g., Kivimaki et al., 2015, Sparks et al., 1997; Virtanen et al., 2011, 2012a, 2012b; Wirtz, 2010). However, a recent review by Ganster et al. (2018) uncovered potential biases in those studies. In reviewing large meta analyses about long working hours and health, the authors found only small effect sizes and inconsistent relationships between long working hours and health outcomes. Those equivocal findings make it hard to draw clear-cut conclusions especially for policy makers in terms of changing existing laws.

In an effort to shed light on this heterogeneity in research, we aim 1) to present a conceptual model summarizing existing research 2) emphasize shortcomings of current research and 3) identify various research gaps and show what we still need to know. In particular, we pinpoint to the importance of contextual variables (e.g., demographics, exposure to other job demands,) and refer to the special role of recovery. While it is well-established that long working hours have the potential to deplete energy resources, and that various recovery activities aid in replenishing those resources (Mayer, Seiler, Langer, & Meier, 2016), it is less known how long this recovery process should take and whether the length of certain recovery activities helps in the replenishment (see Sonnentag, Venz, & Casper, 2017). Advancing knowledge in this arena not only helps policy makers to make more informed choices about long working hours and required rest periods, but also increases employee's awareness in this regard.

1. Ganster, D. C., Rosen, C. C., & Fisher, G. G. (2018). Long Working Hours and Well-being: What We Know, What We Do Not Know, and What We Need to Know. *Journal of Business and Psychology*, 1-15.
2. Mayer, S., Seiler, K., Langer, P., & Meier, S. (2016). Richtig erholen – zufriedener arbeiten – gesünder leben. Erholung und Arbeit im Gleichgewicht. Ein Leitfaden für Beschäftigte. [Recover well – work well and live healthy. Recovery and work in balance. A guide for employees]. Retrieved September 7th, 2018 from [https://www.lia.nrw.de/\\_media/pdf/service/Publikationen/lia\\_praxis/LIA\\_praxis1.pdf](https://www.lia.nrw.de/_media/pdf/service/Publikationen/lia_praxis/LIA_praxis1.pdf).
3. Sonnentag, S., Venz, L., & Casper, A. (2017). Advances in recovery research: What have we learned? What should be done next? *Journal of Occupational Health Psychology*, 23, 365.

## Antecedents and consequences of work-break-skipping in two representative surveys

A. Lohmann-Haislah<sup>\*a</sup> (Mrs), J. Wendsche<sup>b</sup> (Dr), A. Schulz<sup>a</sup> (Mrs), I. Schöllgen<sup>a</sup> (Dr)

<sup>a</sup> Federal Institute for Occupational Safety and Health, Berlin, GERMANY ; <sup>b</sup> Federal Institute for Occupational Safety and Health, Dresden, GERMANY

\* lohmann-haislah.andrea@baua.bund.de

**Background:** According to the human right to rest and leisure, including reasonable limitation of working hours and periodic paid holidays (United Nations, 1948), European working time regulation (European Union, 2003) defines not only the maximum of weekly working time, but also the minimum of daily recovery periods. The latter concerns the rest period after work as well as the rest breaks during the working day. Thus EU-countries have to take the measures necessary to ensure that on working days exceeding six or more hours, every worker is entitled to a rest break. Details including duration and the terms on which it is granted, are laid down in collective agreements or agreements between the two sides of industry or, failing that, by national legislation. Under this directive the German Working Time Act (ArbZG, 1994) regulates a mandatory rest break of 30 minutes after six hours of working time at the latest. However, several findings indicate that these breaks are often skipped or taken incompletely. Indeed little is known about the extent of skipping breaks and about its antecedents and consequences.

**Purpose:** The aim of our study was to show and compare findings concerning the extent and the antecedents and consequences of skipping breaks in two different German surveys.

**Design/Methodology:** To analyse data of two large and representative cross-sectional surveys (1. BIBB-/BAuA workers' survey 2012, n = 17.178; 2. BAuA Working Time Report Germany 2016, n = 17.620), we looked at descriptive measures and conducted Chi-Square-Tests and logistic regression analysis.

**Results:** Both surveys showed that 28% of employees are often skipping breaks, especially female executives and staff with low rest break autonomy. The main reasons given for skipping breaks were either the lacking fit into the workflow or too much work. Further analyses showed that frequent high work intensity, long working hours, shift or weekend work, and small reconcilability of work and family are associated with an increased risk of skipping mandatory breaks. Weekend work and high work intensity were identified as the main drivers for skipping breaks, furthermore a female sex with small reconcilability of work and family were significant predictors. Taking into account all significant predictors, the amount of skipping breaks increased to 66%. Looking at the psychosomatic complaints we found that employees without work break time reported between 8% and 16% more complaints than those with rest breaks, especially under more additional unfavourable working conditions. However, results also supported breaks as job resource reducing the negative consequences of stress.

**Discussion/Implications:** Considering the changing world of work, the demographic change and the lack of skilled workers in Germany, it can be assumed, that demands, notably psychological ones such as work intensity, will increase. For this reason, the focus on worksite recovery opportunities has to be intensified. In this regard greater attention must be paid to work break skipping and its antecedents. The perspective also should be widened for the demands and resources associated with skipping breaks and should be examined in longitudinal studies as well.

1. ArbZG (1994). Arbeitszeitgesetz. Retrieved from Juris website:

<https://www.juris.de/jportal/portal/page/homerl.psm1?cmsuri=%2Fjuris%2Fde%2Fkostenfreieinhalte%2Finfokostenfreieinhalte.jsp&fcstate=5&showdoccase=1&doc.part=X&doc.id=BJNR117100994#BJNR117100994>

2. European Union (2003). Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time. Retrieved from Eur-Lex website:

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0088&from=DE>

3. United Nations (1948). Universal Declaration of Human Rights. Retrieved from United Nations website:

<http://www.un-documents.net/a3r217a.htm>

## Shift work and the relation with mental health problems in factory workers

G. Hulsegge<sup>\*a</sup> (Dr), H. Paagman<sup>b</sup> (Ms), K. Proper<sup>c</sup> (Dr), W. Van Mechelen<sup>a</sup> (Prof), H. Anema<sup>a</sup> (Prof)

<sup>a</sup> Amsterdam UMC, Amsterdam, NETHERLANDS ; <sup>b</sup> HumanTotalCare, Utrecht, NETHERLANDS ; <sup>c</sup> Dutch National Institute for Public Health and the Environment, Bilthoven, NETHERLANDS

\* g.hulsegge@vumc.nl

**Background:** Little is known about the relationship between shift work and mental health due to the availability of only a few studies that lack information on shift work properties and self-perceived psychological strain from shift work, such as satisfaction with shift schedule. Therefore, we aimed to investigate in a large homogeneous group of factory workers the relationships of shift work properties (i.e. the type of shift work and number of years worked in shifts) and self-perceived psychological strain from shift work with mental health.

**Method:** The population consisted of 4,322 non-shift factory workers, 3,337 5-shift schedule factory workers (rotating between morning, evening, and night shifts), and 128 2-shift schedule factory workers (rotating between morning and evening shifts). These factory workers participated between 2011-2016 voluntarily once or twice (approximately 3 years apart) in the companies' Preventive Medical Examination (PME). During the PME, the validated 15-item Utrecht Burnout Scale was used to measure burnout exhaustion, distance, and competence. The validated 16-item distress scale of the Four Dimensional Symptom Questionnaire was used to measure distress. Psychological strain from shift work was measured with questions on 1) predictability of shift schedule, 2) shift schedule control, 3) satisfaction with shift schedule, and 4) the perceived impact of shift schedule on other tasks/obligations, hobbies, and social activities. The associations of shift work properties and self-perceived psychological strain from shift work with mental health outcomes was analyzed using linear mixed models adjusted for age, gender, education, gross salary, marital status, living with children, working hours/week, work pressure, and support from supervisor and colleagues.

**Results:** Despite small effect sizes, preliminary results showed 5-shift work to be statistically significantly associated with lower exhaustion (B: -0.07, 95%CI: -0.11--0.02) and distance to work (B: -0.06, 95%CI: -0.10--0.01). 5- and 2-shift work was not significantly associated with distress (B: 0.30, 95%CI:-0.06-0.66 and B:-0.09, 95%CI:-1.22-1.04, respectively). Within shift workers, lower perceived impact of shift schedule on other tasks/obligations, hobbies, and social activities was associated with higher exhaustion (B: 0.27, 95%CI: 0.22-0.32), distance to work (B: 0.19, 95%CI: 0.13-0.24), competence (B: 0.18, 95%CI: 0.13-0.23), and distress (B: 2.13, 95%CI: 1.70-2.55). Results regarding the dose-response relation between number of years worked in shifts and mental health will be available at the conference.

**Conclusion:** This study revealed only small differences in mental health problems between shift workers and non-shift workers, but perceived impact of shift work on activities outside work was associated with mental health problems. Future research should investigate how shift schedules can be better aligned with private life activities and obligations.

## The courses of subjective fatigue and objective physical activity during a 2-week-on/2-week-off offshore shift rotation

P. Ots\*<sup>a</sup> (Ms), V. Riethmeister<sup>a</sup> (Ms), J. Almansa<sup>a</sup> (Dr), U. Bültmann<sup>a</sup> (Prof), S. Brouwer<sup>a</sup> (Prof)

<sup>a</sup> University of Groningen, University Medical Center Groningen, Groningen, NETHERLANDS

\* p.ots@umcg.nl

**Objective** Offshore workers are a vulnerable group at the labour market as a result of strenuous working conditions (e.g. shift work, long work hours) and unhealthy lifestyles (e.g. high BMI and low physical activity (PA)). Moreover, fatigue has been identified as a highly prevalent symptom in the offshore workforce and may be an important risk factor for early labour market exit. Yet, the course of fatigue during an offshore shift rotation had hardly been studied. In addition, previous epidemiological studies have indicated that PA may positively affect fatigue, but knowledge on this relationship in the offshore workforce is lacking. In this study, we aimed to (1) investigate the courses and average levels of subjective fatigue and objective PA over a full offshore rotation and (2) examined the effect of PA on fatigue.

**Method** A longitudinal observational study with repeated measures was performed among 60 offshore workers during a full 2-week on/2-week off offshore shift rotation. The offshore shift rotation consisted of a specified pre-offshore (7 days), offshore (14 days) and post-offshore (7 days) period. Subjective fatigue was examined using morning, evening, and daily increment Karolinska Sleepiness Scale (KSS) scores. Objective PA was assessed using Daytime Activity Averages (DAA) from actigraph recordings, which has been identified as a valid and objective tool to measure PA. Linear Mixed Model (LMM) analyses were used to examine courses and average levels of subjective fatigue and objective PA across the full offshore shift rotation and per period. In addition, LMM analyses were used to examine the effect of daily PA on next-morning fatigue.

**Results** The course of evening KSS scores increased across the full offshore shift rotation (slope=0.02, 95% CI: 0.00; 0.04). No significant change in course was found for morning and daily increment scores of fatigue. Examining the specified periods showed decreases in evening KSS scores during the pre- and post-offshore period (-0.02, 95% CI: -0.09; -0.05 and -0.14, 95% CI: -0.21; -0.06), and an increase during the offshore period (0.06, 95% CI: 0.03; 0.09). Average evening KSS scores were lower pre-offshore (M=4.35, 95% CI: 3.86; 4.85) than offshore (M=4.58, 95% CI: 4.09; 5.06) and post-offshore (M=4.67, 95% CI: 4.17; 5.16). The course of DAA did not change over time, nor within the specified periods. Yet, average DAA scores were higher pre-offshore (M=120.58, 95% CI: 110.81; 130.36) than offshore (M=112.13, 95% CI: 105.21; 124.94). DAA did not affect next-morning KSS scores.

**Discussion** Evening fatigue increased over the full offshore shift rotation, but this was especially the result of increased evening fatigue offshore. PA did not change over time, but was slightly higher pre-offshore. Furthermore, no effect of PA on next-morning fatigue was found. In particular, the pre- and post-offshore period seem to be important in reducing fatigue and may also be important in increasing PA. Further research on the antecedents of fatigue is warranted and can guide workplace interventions to reduce fatigue problems offshore. Additionally, PA among offshore workers should be studied more extensively to draw well-founded conclusions.

## **Bullying and harassment among Icelandic teachers**

H. Sigursteinsdottir\*<sup>a</sup> (Dr)

<sup>a</sup> University of Akureyri, Akureyri, ICELAND

\* hjordis@unak.is

The debate on work-related violence such as bullying, harassment and violence is essential when discussing work-related health, well-being and safety at work. Bullying and harassment in the workplace can have severe consequences for both the victim and the workplace. The study aims to investigate the prevalence of bullying, harassment and violence among members of the Icelandic teachers' union. The study is based on a cross-sectional online survey conducted in February 2017. A request for participation was sent by e-mail to 9,839 members, 4,518 responses were received giving a 46% response rate.

The results of the study show that over 10% of the members had been bullied at work last two years, 2% sexually harassed and 3% had experienced gender-based harassment. About 5% had experience threats, and 13% exposed to mental violence. Furthermore, a higher proportion of male participants than female was bullied at work. Attention is drawn to many none reported cases of bullying and other harassment or 63-79%. Most commonly, participants reported physical violence or in 37% of the cases and 33% of bullying cases. Only a fifth of the victim of sexual harassment reported the incident. The results also reveal that no action was taken in many reported cases of work-related violence or 61% of the reported bullying cases, 55% of reported physical violence cases and 52% of reported cases of sexual harassment. The proportion was lower for reported cases of gender-based harassment or 39% and 37% of the cases regarding threats in the workplace. It was common for participants who reported bullying at work to experience that their professional opinion or point of view at work was ignored (56%), 45% experienced to be minimised or mocked at work, 42% had experience having been a disproportionate criticism of their work and 42% had experienced social exclusion. The most common perpetrators were co-workers in cases of bullying (57%), sexual harassment (66%), gender-based harassment (68%) and physical violence (43%). Participants mentioned superior as perpetrators in 48% of cases of bullying and 40% of physical violence. The students were almost exclusively named as perpetrators of physical violence (95%) and about 50% of cases of threats.

Based on the proportion of those who have suffered bullying, sexual harassment, gender-based harassment, threats and violence at work, work-related violence has become a severe problem in the teacher's workplaces. The study demonstrates the importance of preserving the work organisation and the workplace behaviour of all employees. It also shows the importance of managers or those who are responsible for the organisational work environment implement prevention strategy for preventing workplace bullying.

## A qualitative analysis of organizational antecedents of workplace sexual harassment

I. Thibau<sup>\*a</sup> (Ms), C. Winslow<sup>a</sup> (Dr), HK. Cheung<sup>b</sup> (Dr), C. Banks<sup>a</sup> (Dr)

<sup>a</sup> University of California, Berkeley, Berkeley, Ca, UNITED STATES ; <sup>b</sup> University at Albany, SUNY, Albany, Ny, UNITED STATES

\* ijcthibau@berkeley.edu

**Introduction.** Sexual harassment remains a persistent and pervasive problem in work organizations today. Corresponding research aiming to uncover potential causes of harassment across a variety of organizational contexts has focused on individual differences (e.g., personality, gender) as well as characteristics of the work environment (e.g., job gender context, climate; Bowling & Beehr, 2006). Arguably, understanding of the latter has stronger potential to inform preventive measures within organizations, especially given that the efficacy of individually-focused sexual harassment training remains in question (e.g., Bingham & Scherer, 2001). Therefore, in this qualitative study, we seek to examine organizational factors that enable sexual harassment to occur through a qualitative analysis of narrative reports of sexual harassment from victims and direct observers of harassment. Although the focus of this study is on understanding environmental factors within academic institutions of higher education, we hope that the results of this study can be generalized to a variety of organizational contexts.

**Method.** We are in the process of collecting and analyzing approximately 1,000 written "critical incidents" (Flanagan, 1954). Critical incidents are direct observations of human behavior and are well-suited for understanding the environmental conditions that facilitate sexual harassment behavior because they contain contextualized descriptions of situations. Specifically, we are asking staff, faculty, and students at a major U.S. research institution to share incidents of sexual harassment that they either directly experienced or observed while at an academic institution of higher education (current or previous). Participants are anonymously recording their observations in writing following a structured questionnaire requesting the following information: a detailed description of the setting in which the behavior(s) occurred, the observed behavior(s) of the person or persons, what subsequently occurred, how the incident affected them, and whether they believe it was resolved appropriately. The form will also ask respondents to provide demographic information for themselves and the other parties involved in the incident (e.g., the harasser). After collecting incidents, we will content analyze the incidents to identify factors associated with the occurrence of sexual harassment in the first place. As described above, an emphasis will be placed on the role of organizational factors such as leadership practices and other indicators of organizational climate that may promote sexual harassment. Where possible, subgroup analyses will be performed in an attempt to gain a more an understanding of factors that may be specific to certain populations.

**Discussion.** The purpose of this study is to better understand the organizational factors associated with sexual harassment in organizations. The qualitative methodology we employ should allow for a more nuanced understanding of patterns, themes, and other commonalities across a large number of situations. It is our hope that the information collected in this study ultimately will inform both theory on the emergence of sexual harassment in work organizations as well as practical methods for its prevention in academic and other organizational contexts.

1. Bingham, S. G., & Scherer, L. L. (2001). The unexpected effects of a sexual harassment educational program. *The Journal of Applied Behavioral Science*, 37(2), 125-153.
2. Bowling, N. A., & Beehr, T. A. (2006). Workplace harassment from the victim's perspective: A theoretical model and meta-analysis. *Journal of Applied Psychology*, 91(5), 998-1012.
3. Flanagan, J.C. (1954). The critical incident technique. *Psychological Bulletin*, 51(4), 327-358.



## **The prevalence of the LMX breaches and their connections with employee work engagement**

H. Kangas<sup>a</sup> (Mrs), J. Tanskanen\*<sup>a</sup> (Mr), L. Mäkelä<sup>a</sup> (Prof)

<sup>a</sup> University of Vaasa, Vaasa, FINLAND

\* jussi.tanskanen@uva.fi

Although, conflicts in organizations are studied quite extensively, the study on vertical conflicts (e.g. between the leader and their subordinate) remains scarce regardless the importance of the functional leader-follower relationship. This study introduces a novel theoretical concept of LMX breach, integrating literatures of LMX and psychological contract (PC). LMX breach is a violation against the psychological contract and social exchange relationship between employee and his/her supervisor. A LMX breach can occur when employee loses his/her trust in leader or get into more serious and permanent conflict.

The study has two aims. First, the prevalence of three different LMX breaches is examined and then the connection between LMX breaches during a career and employee work engagement is analyzed. Work engagement reflects a positive side of psychological well-being at work. Engaged employees are vigorous, dedicated and absorbed while working.

LMX breaches and their consequences were studied with a Finnish service-sector sample (M=1701) collected from multiple organizations between 2011 and 2012. The connections between LMX breaches during a career and current work engagement were examined with regression analysis. The results indicated that LMX breaches were relatively common. About 60% of respondents had lost trust to one's supervisor during their career at least once. About 14% had ended in permanent feud with one or several of their supervisors and as much as 16% had experienced the ultimate LMX breach as they had left their work one or even multiple times because of their supervisor. In addition, LMX breaches have a negative impact on employee work engagement. Regression analysis revealed that, after adjusting several possible confounders, the level of work engagement was significantly lower for those who had lost trust to their supervisor during their career compared to those who had never lost trust. Furthermore, the level of work engagement did not differ among those who had lost trust only once compared to several times. Regarding ending up in a permanent feud with supervisor, once during a career was not significantly connected with lower work engagement, but several times was. Those who have had to leave their work because of their supervisor had similar result.

The examination of leaving work because of the supervisor proves that even the LMX breaches that have happened, for sure, in previous supervisory relationships influence to current situation. The study indicate that the LMX breaches are relatively common and that they have an effect on employee well-being and motivation.



## **Sexual harassment at work and the psychosocial work environment following the #metoo movement – result from Iceland**

A. Snorradottir\*<sup>a</sup> (Prof)

<sup>a</sup> University of Iceland, Reykjavík, ICELAND

\* astasnorra@hi.is

In late 2017 numerous sexual assault allegations were raised within the Hollywood community leading to a social media movement known as #metoo. Sexual harassment is seen by feminist scholars as a way to undermine women. In a way, women are stereotyped as sexual objects which takes away their individual characteristics. In the workplace sexual harassment will therefore undermine women's authority. Following #metoo, various occupational groups of women in Iceland stepped forward and manifested how sexual harassment had been a culture rather than an isolated phenomenon. This involved women from politics, healthcare, academia, arts, the media, sports and blue-collar jobs to name a few. Their stories revealed that the women often remained silent on their experiences to escape negative attention or fears of revealing having negative affect on their careers.

As a result, in 2018 the Minister of Welfare requested a thorough mapping of how common sexual harassment is in Icelandic workplaces and how employers are handling the problem. A work group was formed to design a survey to apprehend the situation. This presentation will discuss the result of this study. The focus will be on analyzing how sexual harassment is experienced in different occupations and how it is associated with psychosocial work environment factors and if and then how it affected the work career of the victims. The result will be discussed in light of international research literature of workplace harassment and the #metoo movement.

1. Gilmore, S. (2018). Sexual harassment in the workplace: beyond the #MeToo campaign. *The Obstetrician & Gynaecologist*, 20,85–86. DOI: 10.1111/tog.12489
2. McDonald, P. (2012), Workplace Sexual Harassment 30 Years on: A Review of the Literature. *International Journal of Management Reviews*, 14: 1-17. doi:10.1111/j.1468-2370.2011.00300.x
3. McLaughlin, H., Uggen, C. and Blactstone, A. (2012. )Sexual Harassment, Workplace Authority, and the Paradox of Power. *American Sociological Review* 77(4) 625–647 <https://doi.org/10.1177/0003122412451728>

## **Study on the impact of new forms of work and employment on well-being at work.**

MC. Trionfetti\*<sup>a</sup> (Ms), A. Bingen<sup>a</sup> (Prof)

<sup>a</sup> Univeristé libre de Bruxelles, Bruxelles, BELGIUM

\* maria.trionfetti@ulb.ac.be

The communication will present the results of a ten-month research project, funded by the Belgian Federal Ministry of Labour, Employment and Social Dialogue, which aims to identify the risks inherent in new forms of employment and work consecutive to the development of digital technologies.

Based on a combination of qualitative and quantitative analyses (literature review, analysis of Belgian and European data from the 2015 European survey on working conditions and qualitative survey of the sectors and professional groups concerned), the study examines "figures" of spatio-temporal flexibility confronted with the "social uses of digital technology at work" (Dujarier, 2016) and their effects on the modes of organisation and working conditions. The use of digital technology as a "management device" (Brugière, 2018) allows the tool to become, for instance, the prescriber of the work of workers in the platform economy (Degryse, 2016; Valenduc et al., 2016; Drahokoupil and Fabo 2016; Huws et al., 2017) or as a way to monitor work at a certain distance in a despatialized work organization (Taskin, 2016), such as "mobile workers" (Eurofound 2015; Taskin et al. 2010; Vendraim et al. 2016),

The difficulty in understanding and preventing professional risks is due to different characteristics of the work situations analysed. Indeed, employment status, specific modes of remuneration of work, just-in-time flow or alternative time and space management, associated with these new work situations can have multiple effects on workers; both in terms of well-being at work and in terms of the supports needed to establish collective protection. To report on this, the second part of the communication will present the results of the qualitative survey conducted among workers in the sectors and/or professions directly concerned by "digitalisation", but also among trade union representatives and managers, members of collectives, prevention consultants and occupational doctors. The objective will be to highlight the characteristics associated with these new work situations, considering both their impact on health and the first elements that block or facilitate the implementation of collective mechanisms for the prevention of health at work.

1. Brugière, F. (2018). Défendre son indépendance : résistances et actions collectives des chauffeurs uberisés. Communication présenté aux journées internationales de la sociologie du travail, Paris du 9 au 11 juillet 2018.
2. Dujarier, M-A. (2016). Digital labor travail du consommateur, quels usages sociaux du numérique?. INA Global, La Revue des Industries Créatives et des Médias. Repéré à <https://www.inaglobal.fr/numerique/article/digital-labor-travail-du-consommateur-quels-usages-sociaux-du-numerique-8729>.
3. Eurofound. (2015). New forms of employment. Luxembourg: Publications Office of the European Union.

## Reflection on the "Right to Disconnect" From the Workplace Through French Legal Framework

L. Lerouge<sup>\*a</sup> (Dr)

<sup>a</sup> COMPTRASEC UMR5114 CNRS-University of Bordeaux, Pessac, FRANCE

\* loic.lerouge@u-bordeaux.fr

Nowadays, information and communications technologies (ICTs) increased productivity. At the same time they contributed to work intensification. They also cross the border between workplace and personal life. From these observations, a country like France is experimenting since January 2017 a "right to disconnect" inserted in the Labour Code. The aim was to be able to suggest a digital tools regulation. The objective was also to promote the respect of rest periods (11-hour rest is required between two working days) and the balance between professional life and personal life, which was undermined by the use ICTs. The right to disconnection has to be combined with the employer obligation to ensure health and safety and to implement general preventions of preventions, but through collective bargaining.

After having presented the French right of disconnection legal framework and how it is enforced, the issues to consider will focus on its strengths and weaknesses. Through the strengths, the aim will be to analyse which content the right to disconnection deals with according the kind of employees to include in its field (employees, executive managers, teleworkers) or life quality in the workplace policies. Employers have to keep in mind that continually soliciting employees without even respecting the border with his personal life are likely to be recognised as bullying or psychological harassment by the Courts. Nevertheless, the main advantage is to enable employees to not response to employer requests during rest periods without any risk of penalties. But even if the idea and the philosophy sound good, in some way we can doubt about the effectiveness and the efficiency of this new right. Speaking about the weaknesses means exploring the limits of the right to disconnection.

The working conditions and the activities are so different between companies that it is not always possible to implement the same right to disconnection. Hence, the range of issues make the implementation of this right very complicated. So the conclusion will go back to the stakes and will approach challenges that the right to disconnect has to face. One of the main issues is to tackle work overload and manage it according the respect of the right to disconnection. An other challenge is to combine right to disconnect and respect of individual liberty to use our private life as we want. Finally, can we expect a sort of co-responsibility between employer and employees? Each stakeholder is responsible for his/her acts and their effect on the others in the workplace; what about ethical behaviour?

## To be or not to be overconnected. From individual difficulties to individual and collective coping mechanisms

O. Morand<sup>a</sup> (Mrs), V. Grosjean<sup>\*a</sup> (Dr), B. Cahour<sup>b</sup> (Prof), ME. Bobillier-Chaumon<sup>c</sup> (Prof), B. Paty<sup>a</sup> (Dr)

<sup>a</sup> INRS, Vandoeuvre, FRANCE ; <sup>b</sup> CNRS i3 Ecole nat.sup.Télécom ParisTech, Paris, FRANCE ; <sup>c</sup> CNAM, Paris, FRANCE

\* vincent.grosjean@inrs.fr

Connection has become an essential component of work. Often considered as a source of efficiency, rapidity and accessibility of information, it may have harmful effects on individuals, collectives or organizations (Bobillier-Chaumon, 2012, Jauréguiberry, 2014). Among the negative impacts often mentioned, the intensification of work's pace, a disturbed work-life balance, fragmentation of activity. Social pressure to overconnection is also denounced and studies indicate that being connected can be used by individuals as a proof of their engagement (Felio 2013, Créno & Cahour 2016, Boswell & al.2016) and collective and organizational pressure may partially explain a tendency to a continuous connection.

**Aim:** Our study aims to characterize elements that may contribute to a positive or a negative experience of connection at work and to identify ways to improve the situation in the organization.

**Method:** We focused on a population of managers and technicians in a large IT company. The study combined three methods. First, we designed a questionnaire about practices, uses and feelings linked to connection and about its potential effects on health. A representative sample of 436 individuals was collected. In a second phase, in-depth interviews were conducted with 20 individuals who had completed the questionnaire. One part of the interview was focused on general aspects (connexion practices, work environment, uses of ICT). A second part was focused on a representative day of work. We used elicitation method (Vermersch, 1994). The aim was to understand first person individuals' practices of connection and rationales, and individuals' feeling related to these practices in the specific situation of a recent day of work. In a third part of the study, we have also analyzed the existing regulations (individual, collective and institutional) of the connection practices in the company.

**Results:** With the questionnaire, a clustering technic was used to differentiate three groups regarding their level of connection. 28% of the subjects are facing difficulties with their connections, and the nature of their difficulties and the impacts on work and life were identified. Results confirm that some workers have received negative feedback from their hierarchy related to their disconnection during non-working hours. Complains related to work overload and missed information are also visible. The most impacted sectors and professions are also identified.

The interviews allow us to understand concrete contextual elements of connection and personal feelings about these practices. The connection experience seems to depend of :

- the level of connection (few, intermediate or highly connected);
- the type of activity (commercial, technical, transversal);
- the type of interactions (external and/or internal) ;
- the regulations (individual, institutional and collective).

**Conclusions:** Our analyses show the importance of team solidarity and of the way the group contribute to regulate the connection overload when neither the individuals nor the institution succeed. It could be interesting, as planned in a next step of our research, to work on the collective and organizational levels to construct better strategies related to connection and work. Taking into account the results of our previous analyses, we will then discuss and improve the individual and collective experience of connection.

1. Créno, L., & Cahour, B. (2016). Les cadres surchargés par leurs emails?: déploiement de l'activité et expérience vécue. *Activités*, 13(1).
2. Bobillier-Chaumon, M.E., Eyme, J. (2012), Le cadre décadré : quand les TIC désarticulent le travail. In F. Jeffroy & A. Garrigou (Ed). *L'ergonomie à la croisée des risques. SELF'2011* , Congrès International d'Ergonomie. Paris, France.
3. Brooks, S. (2015). Does personal social media usage affect efficiency and well-being?. *Computers in Human Behavior*, 46, 26-37.

## Extremely time-efficient high-intensity interval training improves cardiometabolic health, work ability and quality of life in obese employees.

D. Reljic<sup>\*a</sup> (Dr), F. Frenk<sup>a</sup> (Ms), HJ. Herrmann<sup>a</sup> (Dr), Y. Zopf<sup>a</sup> (Prof)

<sup>a</sup> University Hospital Erlangen, Erlangen, GERMANY

\* dejan.reljic@uk-erlangen.de

**INTRODUCTION:** The prevalence of obesity is constantly rising worldwide. Obesity, particularly in conjunction with further cardiometabolic risk factors (e.g. hypertension), is associated with lower work ability, diminished quality of life (QoL) and an increased risk for cardiovascular disease and mortality<sup>1,2</sup>. Increasing physical activity (PA) and dietary modifications are cornerstones in the treatment of obesity and cardiometabolic risk factors. However, many obese adults do not achieve the recommended PA-levels (150 min/week) and lack of time is among the reasons most commonly cited for insufficient PA. High-intensity interval training (HIIT) has emerged as a time-efficient exercise strategy for inducing adaptations that are linked to improved health outcomes<sup>3</sup>. However, data regarding feasibility and the effects on cardiometabolic health and work ability in obese employees are lacking. Here, we present preliminary data from a randomized-controlled study examining the impact of a very time-efficient HIIT-intervention (14 min/session) over 12 weeks on the cardiometabolic risk profile, work ability and QoL in obese individuals.

**METHODS:** Twenty obese employees from different sectors (47±12 yrs, BMI: 38.2±8.0 kg/m<sup>2</sup>, body fat: 44.7±7.4%) with ≥2 cardiometabolic risk factors participated in the study. Cardiometabolic risk was determined by the Metabolic Syndrome Z-Score (MetS), which was calculated from fasting blood glucose, HDL-cholesterol, triglycerides, waist circumference (WC) and mean arterial blood pressure (MAB). Work ability and QoL were assessed using the Work Ability Index (WAI) and EQ-5D-5L questionnaire. All subjects received nutritional counselling (NC) throughout the 12 weeks (goal: -500 kcal/day). Subjects were either randomized to HIIT (n=10, baseline body weight [BW]: 123±38 kg, MetS: 2.1±4.4) performing 5x1 min HIIT at 85-95% maximal heart rate on cycle ergometers, 2x weekly for 12 weeks, or an inactive control group receiving only NC (CON, n=10, baseline BW: 107±13 kg, MetS: 0.9±2.5).

**RESULTS:** Compliance rates in HIIT averaged 93±8% and no adverse events occurred. HIIT and CON significantly (P<0.01) reduced BW by 2.7 kg and 4.0 kg, respectively. Only HIIT reduced MetS by 1.1 units (P<0.05), mainly due to a reduction in WC (-5.6 cm, P<0.05) and MAB (-9 mmHg, P<0.05), and increased WAI (35.5±5.9 to 38.7±3.9, P<0.05) and QoL (67±18 to 80±14, P<0.01). In CON, no significant changes occurred in MetS, WAI and QoL.

**CONCLUSIONS:** The preliminary results of this study indicate that HIIT that requires as little as 28 min/week may induce significant improvements in cardiometabolic health, WAI and QoL in obese employees after only 12 weeks. Importantly, the applied HIIT-protocol appears to be well tolerated and accepted by obese individuals as became evident by high compliance rates. Our results underpin the wide range of specific benefits on health and subjective measures through exercise that go well beyond simple weight loss achieved through dietary restriction alone. Thus, HIIT may be an interesting option for worksite health promotion programs. The final data of this still ongoing study will allow more definitive conclusions.

1. Andersen LL, Izquierdo M, Sundstrup E. Overweight and obesity are progressively associated with lower work ability in the general working population: cross-sectional study among 10,000 adults. *Int Arch Occup Environ Health*. 2017;90:779-787.
2. Hui WS, Liu W, Ho SC. Metabolic syndrome and all-cause mortality: a meta-analysis of prospective cohort studies. *Eur J Epidemiol*. 2010;25:375-384.
3. Kessler HS, Sisson SB, Short KR. The potential for high-intensity interval training to reduce cardiometabolic disease risk. *Sports Med*. 2012;42:489-509.

## Evaluating relationships between the use of dynamic office workstations (DOWs) and well-being

V. Schellewald\*<sup>a</sup> (Ms), J. Kleinert<sup>b</sup> (Dr), R. Ellegast<sup>a</sup> (Dr)

<sup>a</sup> Institute for Occupational Safety and Health (IFA) of the German Social Accident Insurance, Sankt Augustin, GERMANY ;

<sup>b</sup> Institute of Psychology, German Sport University Cologne, Cologne, GERMANY

\* vera.schellewald@dguv.de

The modern work environment is not only becoming increasingly sedentary, it is also rapidly changing in structural terms, including higher workloads, increasing time pressure, and decreasing job security due to more contract and part-time work. These factors might result in higher levels of work-related stress, leading to productivity loss and absenteeism or even to severe mental health problems (Tennant, 2001). The potential of physical activity to counterbalance these negative effects on mental health is widely established: state and trait anxiety and the risk for depression decreases, mood state improves, self-esteem increases, the perception of stress can be reduced and subjective well-being can be enhanced (Biddle & Mutrie, 2008). Therefore, physical activity is included in many modern occupational health promotion measurements to support well-being.

Dynamic office workstations (DOWs) are one option to facilitate light physical activity while working at a desk. Evidence for physiological effects of using these DOWs is given, but just a few studies evaluate well-being as an outcome of using DOWs. Additionally, this research on well-being is inconclusive, as the construct well-being has been operationalized in different ways as well as with different methodological approaches. Furthermore, none of the existing studies on using DOWs and well-being evaluated a possible relationship between characteristics of use (like frequency, duration and speed) and well-being. As research on physical activity in general shows a dose-response relationship between the amount of activity and the effects on well-being, this is of interest for the implementation of DOWs in occupational settings as well. Therefore for our research in a real-life office environment, evaluating possible relationships between characteristics of use of DOWs and short-term changes on well-being were of special interest.

In a 12 week observational study, 36 employees were given free access to eight DOWs (cycling devices). Characteristics of use (i.e. frequency, duration, speed, variation of speed) were self-determined but registered objectively for every event of use. For the assessment of changes in short-term, employees rated their well-being immediately before (pre) and after (post) using a DOW on a modified version of the EZ-scale from Nitsch (1976) including the dimensions recovery, self-confidence, calm, mood and willingness to perform.

Results of paired t-test analysis of pre- and post-measurements showed a significant increase in four of five dimensions of the EZ-scale in general. By using logistic GEE (Generalized Estimating Equations) regression models we evaluated relationships between the characteristics of use and the possibility of a positive change in the five dimensions. Specifically, we found significant relationships between positive changes in the dimensions recovery, calm, and mood on the one hand and specific characteristics of use (i.e. duration, speed and variation of speed) on the other hand. Therefore it can be assumed, that there are possible dose-response relationships between characteristics of use of DOWs and positive changes of well-being. The implementation of DOWs might be a way to contribute to workers' psychological health. Future studies are planned to evaluate, amongst other things, relationships between well-being and using DOWs with differing intensities while tasks of varying difficulty are completed.

1. Biddle, S. J. H., & Mutrie, N. (2008). *Psychology of Physical Activity: Determinants, Well-being, and Interventions* (2 ed.). New York: Routledge.

2. Nitsch, J. R. (1976). Die Eigenzustandsskala (EZ-Skala) – Ein Verfahren zur hierarchisch-mehrdimensionalen Befindlichkeitsskalierung. In J. R. Nitsch & I. Udris (Eds.), *Beanspruchung im Sport. Beiträge zur psychologischen Analyse sportlicher Leistungssituationen* (pp. 81-102). Bad Homburg: Limpert.

3. Tennant, C. (2001). Work-related stress and depressive disorders. *Journal of Psychosomatic Research*, 51, 697-704. doi:10.1016/S0022-3999(01)00255-0



## Physical activity at work may not be health enhancing. A systematic review with meta-regression on the association of occupational physical activity with cardio-vascular mortality

P. Coenen\*<sup>a</sup> (Dr), N. Krause<sup>b</sup> (Prof), M. Huysmans<sup>a</sup> (Dr), A. Holtermann<sup>c</sup> (Prof), W. Van Mechelen<sup>a</sup> (Prof), L. Straker<sup>d</sup> (Prof), A. Van Der Beek<sup>a</sup> (Prof)

<sup>a</sup> Amsterdam UMC, location VUmc, Amsterdam, NETHERLANDS ; <sup>b</sup> Department of Environmental Health Sciences and Department of Epidemiology, School of Public Health, University of California Los Angeles, Los Angeles, UNITED STATES ;

<sup>c</sup> National Research Centre for the Working Environment, Copenhagen, DENMARK ;

<sup>d</sup> School of Physiotherapy and Exercise Science, Curtin University, Perth, AUSTRALIA

\* p.coenen@vumc.nl

**Background:** Emerging evidence suggests a physical activity health paradox, with positive health outcomes associated with leisure-time PA, but negative health outcomes for those engaging in occupational physical activity (OPA). We have confirmed this paradox in a recent meta-analysis, showing that males with high (compared to low) level OPA had an 18% increased risk of all-cause mortality<sup>1</sup>. Despite this, the physical activity health paradox remains insufficiently understood, potentially because of limited knowledge regarding disease specific health outcomes. In this study we therefore reviewed evidence on the association between OPA and cardiovascular (CVD) mortality.

**Methods:** We performed a systematic search of the literature in electronic databases screening for prospective studies on the association between OPA and CVD mortality. We statistically pooled effect-sizes in a meta-regression analysis.

**Results:** We screened 2,490 articles and included 27 (from 19 studies), reporting on the association between OPA and mortality from any CVD and, specifically from coronary heart disease and stroke. These studies (n=252,125) showed no overall association between OPA and CVD mortality, with a hazard ratio (HR) [95% confidence interval]: 0.95 [0.88 1.09]. In contrast, the studies of higher methodological quality that used validated and well-described OPA assessment methods showed a substantial positive association HR 1.14 (95% CI 1.02-1.27).

**Conclusion:** The lack of a protective effect of OPA in the overall analyses are in line with recent reviews<sup>1,2</sup> and in clear contrast to the consistently observed health enhancing effects of leisure-time physical activity<sup>3</sup>. Our results therefore provide additional empirical evidence for differential health effects for physical activity at work and during leisure-time. The inconclusive summary effect estimate for all studies appears to be the result of exposure misclassification bias. The summary effect estimate from higher quality studies shows that higher levels of OPA were associated with a statistically significant 14% increase in risk of death from CVD.

CVD mortality risks were attenuated compared to all-cause mortality of OPA reported earlier<sup>1</sup>. This may be due to stronger healthy worker selection effects in studies of CVD outcomes. The cardinal symptoms of CVD, such as activity-related chest pain and shortness of breath, may prompt affected workers to select into less physically demanding jobs, separate from work, or perform less demanding tasks within their jobs. Consequently, these workers are underrepresented in higher and overrepresented in lower OPA categories leading to spuriously lower CVD risk in the highest OPA categories.

Future research needs to use improved (objectively measured) OPA assessments to investigate-response relationships to reduce misclassification bias. In addition, quantitative assessment of effect modification by pre-existing CVD, healthy worker effects, and residual confounding are needed.

1. Coenen et al. Br J Sport Med 2018, 52(20): 1320-1326.
2. Cheng et al. Eur J Prev Cardiol 2018, doi:10.1177/2047487318795194.
3. Li et al. Curr Opin Cardiol 2013, 28(5):575-583

## **An integrated workplace mental health intervention in an Australian police context: results of a cluster-randomised trial**

AD. Lamontagne<sup>\*a</sup> (Prof), A. Milner<sup>b</sup> (Dr), A. Martin<sup>c</sup> (Prof), K. Page<sup>d</sup> (Dr), N. Reavely<sup>b</sup> (Prof), A. Noblet<sup>d</sup> (Prof), T. Keegel<sup>e</sup> (Dr), A. Allisey<sup>d</sup> (Dr), A. Papas<sup>f</sup> (Dr), K. Witt<sup>g</sup> (Dr), P. Smith<sup>h</sup> (Prof)

<sup>a</sup> Deakin University, Burwood, Vic, AUSTRALIA ; <sup>b</sup> University of Melbourne, Melbourne, AUSTRALIA ;

<sup>c</sup> University of Tasmania, Hobart, AUSTRALIA ; <sup>d</sup> Deakin University, Burwood, AUSTRALIA ;

<sup>e</sup> Latrobe University, Melbourne, AUSTRALIA ;

<sup>f</sup> Deakin University, Bruwood, AUSTRALIA ; <sup>g</sup> Monash University, Melbourne, AUSTRALIA ;

<sup>h</sup> Institute for Work & Health, Toronto, CANADA

\* tony.lamontagne@deakin.edu.au

### **Background**

We developed, implemented, and evaluated an integrated workplace mental health intervention in an Australian police context. The intervention was co-designed with the hosting police force. The primary aims of the intervention were to improve psychosocial working conditions, develop supportive leadership skills among police station leaders, and promote mental health literacy for all officers.

### **Study Design & Methods**

We used a two-arm cluster-randomised trial design following CONSORT guidelines, with 12 police stations randomly assigned to the intervention and 12 to non-intervention control. The intervention combined multi-session leadership coaching for the senior officers within police stations with tailored mental health literacy training for all ranks. Data were collected from all police members in each station (n = 828 at baseline [response rate of 75.1%] and 736 at follow-up [response rate of 69.1%]). Psychosocial working conditions (e.g., supervisory support, job control, job demands) and mental health literacy (e.g., knowledge, confidence in assisting someone who may have a mental health problem) were assessed using established measures. Effectiveness was evaluated using a cluster-adjusted analysis, controlling for station level characteristics. We also conducted a mixed method process evaluation.

### **Results & Discussion**

Twenty-three stations completed the trial (one intervention station dropped out). Due to a range of challenges, intervention activities were only partially implemented for both senior officers and troops (~50% implementation). Some challenges were organisational (e.g., high mobility of police members) and some station level (e.g., operational demands limiting police member availability). Preliminary effectiveness analysis showed little to no improvement in the outcomes measured in intervention versus control groups

### **Conclusions**

The multiple barriers to intervention implementation limit the ability to draw effectiveness conclusions. For such an intervention to have the intended impacts, additional resources, a longer intervention period, and system-wide implementation may be needed in order to embed supportive leadership practices, and then for those practices to flow through to the troop level.

## Design of a workplace intervention for promoting employees' recovery during shift work

I. Niks<sup>\*a</sup> (Dr), A. Van Drongelen<sup>a</sup> (Dr), E. De Korte<sup>a</sup> (Dr), K. Kranenborg<sup>a</sup> (Mrs), N. Wiezer<sup>a</sup> (Dr)

<sup>a</sup> TNO, Leiden, NETHERLANDS

\* irene.niks@tno.nl

**Background:** Shift work is demanding due to disturbances of biological and social circadian rhythms and can cause negative short-term effects such as increased levels of fatigue and concentration problems (1). A potential way to mitigate these effects and reduce the risk for accidents and productivity loss is enhancing employees' recovery during their shifts. However, studies providing evidence of effective recovery interventions among shift workers are scarce (2). In addition, most interventions do not (sufficiently) tailor its application and content to the needs, preferences and characteristics of the target population. As a result, there is a need to develop and evaluate tailored interventions for shift workers aimed at recovery during work.

**Objective:** the aim of this study is to develop and implement an intervention focused on the 'on-job' recovery of shift workers, including two types of 'known effective' ingredients: a) Recovery-enhancing mechanisms (i.e. activation & relaxation), b) the use of participatory action research (PAR) to develop organizational interventions.

### Research questions

- What is an optimal intervention to enhance recovery during work for shift workers?
- To what extent is this intervention effective in enhancing recovery and reducing negative short-term effects of shift work?
- What are hindering and facilitating factors during the implementation of this intervention?

**Methods:** The study takes place at two units of the logistics department of a large steel company in the Netherlands. A tailored intervention will be developed and implemented through an iterative PAR process. In various sessions, a representative group of employees provides input on the content, design and implementation of the intervention. During parallel sessions, a project group consisting of researchers, line managers, HR managers, and occupational health experts will do the same. Intervention effectiveness will be studied using a waiting list control design (i.e. unit 'A' gets the intervention, unit 'B' waits an additional six months) in combination with a pre- and post-test (after 3 months) online survey for all participants. Outcome variables include, amongst others, fatigue (CIS), need for recovery (VBBA), sleep (PSQI), and general health (SF12). In addition, a subgroup ( $n \geq 20$ ) of intervention group participants will be asked to digitally collect daily life momentary assessments of recovery, behaviour, and levels of sleepiness in relation to momentary context and activity using a mobile app. For the process evaluation, the framework of Randall and Nielsen (3) will be used.

**Results** The PAR employee sessions are being held currently. After two out of four sessions, the employees have come up with the idea to redesign their break rooms. By making the break rooms more convenient and clean, they should become a better place for employees to recover from work (due to either passive or active relaxation). The exact design and facilities of the break rooms will be worked out in the final sessions with employees and the project group. The final intervention, together with the preliminary results of the process and effect evaluation will be presented at the Wellbeing at Work Conference in Paris.

1. Knutsson A. Health disorders of shift workers. *Occup Med (Lond)*. 2003;53(2):103-108.

2. Health Council of the Netherlands. Health risks of night shift work. The Hague: Health Council of the Netherlands, 2017; publication no. 2017/17.

3. 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.

## How can streamlined managerial thinking evolve so that wellbeing at work in a changing world becomes a sustainable reality?

S. Suarez-Thomas<sup>\*a</sup> (Dr), F. Moneger<sup>a</sup> (Dr)

<sup>a</sup> WELL DONE, Barsac / Bordeaux, FRANCE

\* [sabine.suarez-thomas@welldonelab.org](mailto:sabine.suarez-thomas@welldonelab.org)

Our previous research in the field of organizational management, has led us to place our work within the health paradigm in the activity of working ([1]). Drawn on ergonomics of activity theory, this paradigm enables to pursue a two-fold aim, which is composed of two interacted dimensions as productive efficiency and of maintaining the good health of the workforce (Dugué & Petit, 2013). Health is not a state but a balance (Canguilhem, 1947) in a daily construction obtained by acting with autonomy in a collective way and dealing with the whole environment. Health is linked with leeway of workers. Individuals need to have the "power to act" to produce a "well done job" (Clot, 2008), i.e. job deemed of high quality. It also means working in a way which best satisfies the employees themselves, their colleagues, customers, and managers, according to their own values. A "well done job" in which individuals can involve themselves, develop their abilities, skills and intelligence, enables to deal both with the constant and numerous prescriptions and variabilities of each situation. Improving workers health and productive efficiency requires a permanent debate on logics of managing and working between the "top-level-intelligence" and the "bottom-level-intelligence" (Dugué and Petit, 2013). This must lead to an open and mutual discussion about work quality and recognition of the efforts made to build mutual trust.

Our contribution is based on five transformative research-interventions in different sectors such as agro-food industry, counselling, medico-social and national health administration. Our findings show that, despite major results in terms of occupational health and productive efficiency, the common way of thinking management and its management device hinder or even make it impossible to design and implement sustainable workplace wellbeing policies.

Main results deal with the resistance to change the way of managing because of:

- The high power of instrumental, mechanistic and normative managerial thinking
- The omnipresence of management tools that disseminate this ultra-simplifying thinking and that obstructs the existence and use of the margins of manoeuvre of heads, managers and employees.

We end our presentation with the introduction of an innovative management support service called "Management and Work Clinic". This "Clinic" is a place where managers can learn to do differently what they have to.

Top managers are supported to focus on the importance of work management and no longer on their teams to adhere to the rules they have designed. The difficulty comes from a paradox: as workers, it seems obvious to them; as guarantors of management logics for decades, this way of doing their work is perceived dangerous, as a source of uncertainty and loss of control. The evolution of managerial thinking thanks to a collective and reflexive approach is a key to this management focused on development. Henceforth, the management device can evolve so that it becomes enabling. And finally, the joint development of companies and of every employee becomes a strategic aim.

[1] For reasons of confidentiality, we will only give the reference if our draft communication is accepted

1. Canguilhem, G. (1947). Milieux et normes de l'homme au travail. Cahiers internationaux de sociologie, 3, 120-136.
2. Clot, Y. (2008). Travail et pouvoir d'agir. Paris: Presse Universitaire de France.
3. Duguet, B. & Petit J. (2013). Ethical stakes of corporate governance, ergonomic contribution organizational redesign aiming at subsidiarity, Understanding Small Enterprises (USE) conference, New Zealand.



22·23·24  
**MAY**  
2019  
PARIS ISSY-LES-MOULINEAUX



**Wellbeing**  
at work in a changing world:  
CHALLENGES AND OPPORTUNITIES

perosh  
perossh  
perossh

inrs  
Institut National de Recherche et de Santé



© Eva Miron/PMS

# Posters

Session I                      **Wednesday 22th**                      **13:15 – 13:45**                      **p. 141 – p. 161**

---

Session II                      **Thursday 23th**                      **13:50 – 14:20**                      **p. 162 – p. 179**

---

## **Analysis of safety awareness, accident prevention and implementation of behavior based safety program in energy utility firm**

M. Hassaan Shoukat<sup>a</sup> (Mr), U. Hussain<sup>\*b</sup> (Mr), S. Haider<sup>b</sup> (Mr)

<sup>a</sup> Not Applicable, Karachi, PAKISTAN ; <sup>b</sup> Sui Southern Gas Company Limited, Karachi, PAKISTAN

\* umer\_hussain25@hotmail.com

Occupational Safety, Hazard Identification and Accident Prevention is an area of deliberation, studies and ongoing researches. Conventional Safety Techniques in organizations place core responsibility of safety coordination and accident prevention on the shoulders of senior management. Nowadays, an alternative concept adopted by industries to involve employees / front line workers and identifying at risk behaviors to promote safety culture is Behavior Based Safety Program. BBS program is widely implemented in developed countries for identification of hazards and at risk behaviors, however, some studies and applications are conducted in Pakistan.

This research investigates the approach toward safety awareness and accident prevention in an oil and gas energy utility company. Data collection, Steps involved in establishing BBS culture and safety index trend chart are established to evaluate safety awareness. Results shows that after implementing BBS program a significant performance is enhanced as the safety index (SI) progressively increased up to 17% in period of four months. Employees demonstrated positive concerns towards safety and provide suggestion to strengthen BBS program as well.

Findings determine that BBS program is able to minimize accident in energy utility industries along with improving quality and creating safety environment.

Keywords: Safety awareness, Accident prevention, Behavior Based Safety, oil and gas, energy utility.



## Do psychosocial working conditions affect employee self-management of long-term health conditions in the workplace?

SE. Hemming\*<sup>a</sup> (Mrs)

<sup>a</sup> Loughborough University, Loughborough, Uk, UNITED KINGDOM

\* s.e.garton@lboro.ac.uk

**Background:** 5 million people in England have a long-term health condition (LHC) including musculoskeletal (MSK) and mental health disorders (i.e. stress, depression and anxiety). MSK's affect around 9.6 million adults in the UK, with an economic impact of 10.8 million lost working days. Mental health disorders affect one sixth of the UK population at any one time with 12.7% of sickness absence days attributed to this illness. It is projected that the number of people diagnosed with at least one LHC will increase to 18 million by 2025. A majority of LHCs are acquired at working age yet employment rates of those with an LHC are persistently low. Having quality employment is vital for the health and wellbeing of people, and for many countries where the pensionable age has increased, keeping people healthy and productive at work for longer is important for employers. Whilst research has focused on the issues around workers with LHCs, little research has examined contextual factors of work, dynamics of workplace relationships, mechanisms of support and its influence on employee self-management activities, to keep themselves healthy, maintain quality of life and productivity at work.

**Objective:** To identify the workplace self-management support needs of employees with an LHC, and the workplace dynamics that empower people to manage their LHC in work. It is hypothesised that poor psychosocial working conditions (i.e. low control, high demands) will be related to lower levels of patient activation and wellbeing, with higher risks of poor self-management at work.

**Design:** The research adopts a purposeful sampling approach recruiting actively employed people with a minimum of one diagnosed LHC. The research is split into three phases with four interrelated studies including: phase 1, a cross-sectional online employee survey study utilising the Patient Activation Measure (PAM<sup>®</sup>) and UK Health and Safety Executive (HSE) Management Standards Indicator Tool (MSIT); phase 2 was a longitudinal 10-week employee online diary study and; phase 3, an employer semi-structured interview study and employee narrative interview study.

**Findings:** In study 1, 701 participants took part in the online survey of which 43% (n=302) report at least one formally diagnosed LHC. Mental health 15% (n=108) and musculoskeletal 12% (n=83) disorders are most prevalent in the group. Furthermore, 16% (n=111) are affected by other LHCs including lung, cardiovascular, metabolic, endocrine, lung, digestive and neurological. Findings will be presented on a poster of the different groups, HSE scores between the condition and non-condition groups, and regression analyse will be run to test the hypotheses that poor psychosocial working conditions will be related to low activation and higher risks of poor self-management at work. Qualitative data from the diaries and employer interviews will also be presented.

1. Third year PhD researcher and senior Human Resources practitioner with 19 years professional experience.

## WORK ABILITY INDEX AND PSYCHOSOCIAL WORK ENVIRONMENT IN WORKERS FROM HOMES FOR ELDER PEOPLE

T. Ratkajec<sup>\*a</sup> (Dr), J. Hren<sup>b</sup> (Mr)

<sup>a</sup> Occupational Health Service Rogaska, Rogaska Slatina, SLOVENIA ;

<sup>b</sup> Occupational Health Service Rogaska, Health Center Slovenska Bistrica, Rogaska Slatina, SLOVENIA

\* tihomirratkajec@gmail.com

**Introduction.** The consequence of new law about pension insurance in Slovenia was, that a leaving to pension was prolonged and many workers carry out their jobs at older age. The aim of the study was research factors which are influenced to moderate/poor Work Ability Index (WAI) in workers from homes for elder people.

**Methods.** In the study 233 workers were participated (156 nursing staff, 77 non-nursing, 292 female were from all, average age was 42 years, working period was 21 let years). We used questionnaires: Demand-Control by Karasek, Copenhagen Burnout Inventory, Work Ability Index Questionnaire. Data homogeneity was verified and analysed using the t Test, Mann-Whitney test. The correlation between Work Ability Index and other variables was established using Pearson's correlation coefficient, the Odds Ratio (OR) for poor Work Ability Index by using the 2x2 contingency table.

**Results.** Between nursing and non-nursing staff was not difference in WAI (40,5 vs 41) but nursing staff were lower education, more often working in night shift and smoking, they reported about shortage of staff and lack of breaks. WAI of all workers falls with age (older than 50 years had WAI 34), but the correlation between WAI and age is low ( $r = -0,39$ ). However OR for moderate/poor WAI for persons over 50 is OR = 4.62 (CI 95% = 2.42-8.79), for burnout OR = 3.75 (CI 95% = 2.07-6.8), for high demands OR = 2.55 (CI 95% = 1.44-4.52), for low work control OR = 1.92 (CI 95% = 1.0-3.55), for poor co-workers support OR = 2.53 (CI 95% = 1.42-4.5), and for back pain in the last 30 days OR = 4.09 (CI 95% = 2.2-7.6).

**Conclusion:** Compared to some other European countries (NEXT -Study) the WAI of employees in home for elder people in Slovenia is falling more steeply with age. We propose to manager that they should improve working organisation and psychosocial work environment.

1. Camerino D., Van der Heijden B., Estryng-Behar M, in sod. 2003. Work ability in the nursing profession. s.l. : National Institute for Working Life and authors 2003, National Institute for Working Life and authors, 2003. 1404-790X.
2. Tuomi, K., in drugi. 1997. Aging, work, life-style and work ability among Finnish municipal workers in 1981-1992. Scand. J. Work Environ. Health. 23:58-65, 199
3. RatkajecT, Bilban M, Starc R. Influence of Psychosocila Work-Related Factors on Conventional Risk Factors of Ischemic Heart Disease and Homocysteine in Slovenian Male Workers. Coll Antropol 32 (2008) 2;391-397.

## Occupational physicians' perspectives on supporting workers with a chronic disease in strengthening self-control: a needs assessment

A. Bosma<sup>a</sup> (Mrs), C. Boot<sup>a</sup> (Dr), F. Schaafsma<sup>a</sup> (Dr), H. Anema<sup>a</sup> (Prof), S. Bouwhuis\*<sup>a</sup> (Dr)

<sup>a</sup> Amsterdam UMC, Vrije Universiteit Amsterdam, Department of Public and Occupational Health, Amsterdam Public Health research institute, Amsterdam, NETHERLANDS

\* s.bouwhuis@vumc.nl

**Objective:** Self-control by workers with a chronic disease can prevent work related problems and facilitate sustainable work participation. Occupational physicians could play a key role in supporting these workers in exerting self-control. It is important to understand occupational physicians' perspectives on this preventive task and possible ways of providing support. The aim of this needs assessment is to explore barriers and facilitators for supporting workers with a chronic disease in exerting self-control according to the perspectives of occupational physicians.

**Methods:** Two focus groups were held in February and June 2018 with 17 occupational physicians. The occupational physicians were self-employed or employed within the occupational health services department of a large company. Data were analysed using thematic content analysis.

**Result:** The preliminary results show that occupational physicians mainly focus on reducing absenteeism. An occupational physician can carry out preventive tasks as long as workers with a chronic disease, that do not take sick leave, take the initiative to visit the occupational physician. However, these workers, who are still at work, rarely consult an occupational physician. Fitting the job to the capacities of the worker and discussing future disease-related scenarios are mentioned as ways of providing support.

**Discussion:** According to occupational physicians' perspectives, the work environment and health care system play a facilitating role in supporting workers with a chronic disease in exerting self-control. These insights are helpful in developing an intervention for occupational physicians that enables them to support workers with a chronic disease in exerting self-control.

## Does severity of occupational injury predict long term health related quality of life (HRQoL)?

S. Jónsdóttir<sup>\*a</sup> (Mrs), JF. Friðriksson<sup>a</sup> (Mr), K. Tómasson<sup>a</sup> (Dr)

<sup>a</sup> Administration of occupational safety and health, Reykjavík, ICELAND

\* steinthora@ver.is

### Background

The knowledge base on risk factors, frequency of occupational accidents, their source and severity is extensive but few studies have focused on the health related quality of life of victims of occupational accidents. The limited research in that area has suggested significant effects of occupational accidents on health-related quality of life (Amell, Kumar, & Rosser, 2001; Holtedahl & Veiersted, 2010; Lin et al., 2014).

### Objectives

The objectives of this study were to analyse the effects of serious and less serious reportable occupational accidents on HRQoL outcomes and demonstrate which factors are significant predictors of HRQoL in these groups.

### Methods

This historical prospective study was conducted between March and June 2018. A sample of 400 occupational accident victims, half classified as serious accidents, was taken from all occupational accidents reported in Iceland in 2016. A web-based questionnaire was sent to eligible participants and relevant historical data drawn from the occupational accident registry. T-test and ANOVA were used to analyse the difference in mean HRQoL scores between relevant groups.

### Results

There was not a significant difference in HRQoL scores between those who had serious occupational accidents compared to other reportable accidents ( $p=0.944$ ), having permanent consequences after occupational accidents was significantly associated with lower HRQoL scores ( $p=0.044$ ), especially pain ( $p<0.001$ ) and physical health ( $p=0.009$ ) domains. Poor financial position ( $p<0.001$ ), decreased work capacity ( $p<0.001$ ), sickness absence ( $p=0.001$ ), number of health symptoms ( $p<0.001$ ) pain ( $p<0.001$ ), anxiety/depression ( $p<0.001$ ) and number of injury types were all associated with lower HRQoL scores.

### Conclusion

It is vital that rehabilitation and care services to those that have occupational accidents are aimed at those not making their way back into their previous position because of the consequences of the accident, as they seem to be the most vulnerable. Our findings suggest that pain management, psychological support and vocational training should be prioritised.

1. Amell, T. K., Kumar, S., & Rosser, B. W. J. (2001). Ergonomics, loss management, and occupational injury and illness surveillance. Part 1: elements of loss management and surveillance. A review. *International Journal of Industrial Ergonomics*, 28(2), 69–84. [https://doi.org/10.1016/S0169-8141\(01\)00013-0](https://doi.org/10.1016/S0169-8141(01)00013-0)
2. Holtedahl, R., & Veiersted, K. B. (2010). Helse og funksjon etter yrkesskade. *Tidsskrift for Den Norske Laegeforening*, 130(15), 1458–1462. <https://doi.org/10.4045/tidsskr.09.0711>
3. Lin, K. H., Shiao, J. S. C., Guo, N. W., Liao, S. C., Kuo, C. Y., Hu, P. Y. Guo, Y. L. (2014). Long-term psychological outcome of workers after occupational injury: Prevalence and risk factors. *Journal of Occupational Rehabilitation*, 24(1), 1–10. <https://doi.org/10.1007/s10926-013-9431-3>

## **Development of workplaces health risk assessment and management for total health of workers**

Y. Kaeokaemchan<sup>a</sup> (Ms), P. Anantagunlathi<sup>\*a</sup> (Ms), C. Chari<sup>a</sup> (Ms), R. Wirichai<sup>a</sup> (Ms)

<sup>a</sup> Bureau of Occupational and Environmental Diseases, Nonthaburi, THAILAND

\* occ\_service@hotmail.com

### **Objectives**

The Bureau of Occupational and Environmental Diseases, Department of Disease Control, Ministry of Public Health, Thailand has launched occupational health risk assessment and management for total health of worker program since 2016. The objectives of this program are to be as an approach for the establishment to identified hazards and risk assessment and management for total health of worker including workplace safety, employee's physical health and mental health and to encourage the workforce's access to quality occupational health services. The target groups of the project is the workplace's employees who can assess risk of occupational diseases and chronic non-communicable diseases and mental illnesses. The aim of the study is to describe the process of this program.

### **Methods**

Development of the criteria of the project consists of six major steps; 1) health and safety hazard identification, 2) risk analysis and management plan, 3) risk control, 4) connection and collaboration with local health service providers, 5) set up return to work management program in the workplace and 6) monitoring and evaluation. After setting up of criteria, the project has been introduced and encourage the workplace by clinic of occupational diseases in hospital and regional center. The level of implementation of those six steps can be categorized for 4 levels of certificates awarded to workplaces depending on their accomplishments of those criteria including; 1) beginning level 2) basic level 3) good level 4) very good level. The workplace's implemented their action plan and activities according to program guideline due to impelmented activities related to criteria.

### **Results**

In 2016-2017, there were 273 workplaces in 58 provinces applied voluntarily to provide holistic occupational health risk assessment and management for total health of workers (OHRA). Among these, there were 262 workplaces (95.97%) could perform some steps of OHRA. All of those workplaces, there were 45 workplaces has been certified by local health facilitators as workplaces with beginning level, 28 at basic level, 34 at good level, 55 at very good level in 24 provinces. Most workplaces implemented most success on workplace safety issues, but less success on their health and happiness issues. Most of workplaces required technical support from their local health agencies for improvement their OHRA implementation.

### **Conclusions**

Lesson learned: Most workplaces implemented for assessment and management for more than one of their employees' health problem issues. The collaboration among related national and local health and safety agencies is the crucial mechanism to drive sustainable of this project. Capacity building of both external and in-house health facilitators and knowledge sharing with varies professional are the key successful factors to strengthen the workplaces to perform the program continuously.

**Key words:** workplaces, total health of workers, risk assessment

1. B.Sc., M.Sc., Public Health Technical Officer
2. B.Sc., M.Sc., Public Health Technical Officer
3. B.Sc., Public Health Technical Officer

## Working conditions and major depressive disorder: a Brazilian population-based study

N. Soares Xavier Oenning<sup>a</sup> (Dr), P. Klarmann Ziegelmann<sup>a</sup> (Prof), B. Niegia Garcia De Goulart<sup>a</sup> (Prof), I. Niedhammer<sup>\*b</sup> (Prof)

<sup>a</sup> Universidade Federal do Rio Grande do Sul, Porto Alegre, BRAZIL ; <sup>b</sup> INSERM, Angers, FRANCE

\* isabelle.niedhammer@inserm.fr

**Objectives:** Major depressive disorder (MDD) is one of the most common mental disorders and an important public health issue because of its high social and economic costs, both at the society and workplace levels. The identification of risk factors, including occupational risk factors, is thus crucial. There have been very few studies exploring the occupational risk factors for MDD in the working populations in Latin America. The aim of this study was to explore the associations between a large set of occupational factors, including psychosocial work factors, and MDD in the Brazilian working population.

**Methods:** The study was based on the cross-sectional data from the Brazilian National Health Survey (PNS, 2013). The target population of the PNS survey was made up of adult residents aged 18 years and over residing in private households throughout the country. 60,202 people were interviewed (response rate: 91.9%). Among them, 36,442 were working, 19,450 men and 16,992 women. MDD was measured using the diagnostic algorithm (DSM-IV criteria) of the Patient Health Questionnaire, 9 items. Occupational factors included job characteristics (work status, economic activity of the company, occupation, multiple job-holder), working time factors (night and shift work, number of working hours), psychosocial work stressors (work stress, workplace violence) and physico-chemical exposures (intense physical activity, chemical substances, radioactive materials, urban waste, biological materials, marble dust, noise, long exposure to sun). Logistic regression models were performed and adjusted for sociodemographic factors (age, ethnicity, marital status, participation in social activities). All analyses were conducted using weighted and stratified data by gender. Sensibility analyses were performed with additional adjustment for health-related variables and confirmed the results.

**Results:** The MDD prevalence was higher among women than among men and differences between genders were found for most occupational factors. The following occupational factors were associated with a higher risk of MDD: working part time ( $\leq 20$  hours a week) and stress at work for both genders, workplace violence, intense physical activity, exposure to noise and chemicals among women, and prolonged exposure to sun among men. Associations of stress and violence at work with MDD were particularly strong.

**Conclusions:** This study, one of the first studies among the Brazilian working population, showed that psychosocial work stressors were the strongest risk factors for MDD. Some physicochemical exposures were found to be associated with MDD and deserve more attention in this topic. Limitations of the study included: cross-sectional study design, healthy worker effect and reporting bias, that may have impacted the results. Prevention policies oriented toward the work environment may help to prevent depression at the workplace.

## **MENTAL health among young workers in the UK: the impact of job quality**

M. Gilek\*<sup>a</sup> (Ms)

<sup>a</sup> Nottingham Trent University, Nottingham, UNITED KINGDOM

\* magdalena.gilek@hotmail.co.uk

Young workers are particularly disadvantaged in the contemporary labour market. Today many young adults live under precarious employment conditions, have problems in finding stable employment, are not well matched to their jobs in terms of skills and/or education, and generally some young adults are stuck in bad quality jobs with little opportunities of moving up the employment ladder (e.g., Chung et al., 2012; Lundahl, 2011; Scurry & Blenkinsopp, 2011). To date, the information surrounding issues of job quality and mental health among this particularly disadvantaged and vulnerable population is scarce, and often limited to earnings and employment status as an indication of how well young workers are doing.

This study uses large-scale European surveys to examine how young workers in the UK evaluate the quality of their jobs in the contemporary labour market, while focusing on the most significant factors which enable and challenge young adults in achieving or sustaining the high quality of working life, and the implications that job quality has on their mental health.

The results suggest that work intensity and the extent to which a job is meaningful are the key determinants of mental health among young workers. In addition, for some aspects of job quality, a match between a person and a job is important for positive mental health outcomes. In general, this research has important policy implications and makes contributions in three key areas of job quality: its components, predicting factors, and outcomes.

1. Chung, H., Bekker, S., & Houwing, H. (2012). Young people and the post-recession labour market in the context of Europe 2020. *European Review of Labour and Research*, 18(3), 301–317. <http://doi.org/10.1177/1024258912448590>
2. Lundahl, L. (2011). Paving the Way to the Future? Education and Young Europeans' Paths to Work and Independence. *European Educational Research Journal*, 10(2), 168–179. <http://doi.org/http://dx.doi.org/10.2304/eej.2011.10.2.168>
3. Scurry, T., & Blenkinsopp, J. (2011). Under-employment among recent graduates: a review of the literature. *Personnel Review*, 40(5), 643–659. <http://doi.org/10.1108/00483481111154487>



## Does organizational climate moderate the impact of emotional labor on presenteeism in Korean firefighters?

HY. Ryu<sup>\*a</sup> (Ms), DS. Hyun<sup>a</sup> (Mr), DY. Jeung<sup>a</sup> (Dr), CY. Back<sup>a</sup> (Dr), SJ. Chang<sup>a</sup> (Prof)

<sup>a</sup> YONSEI UNIVERSITY, Wonju, KOREA, REPUBLIC OF

\* youhaeyun@naver.com

**Objectives:** The purpose of this study is to examine the moderating effect of organizational climate on the association between emotional labor and presenteeism in Korean firefighters.

**Methods:** Data were from the FRESH (Firefighters Research: Enhancement of Safety and Health) Study funded by National Fire Agency in Korea. A total of 4,871 firefighters whose main duty was 'emergency medical aid' were analyzed. Emotional labor (EL) was measured using the Korean Emotional Labor Scale (K-ELS), consisting of three sub-scales: 'emotional demanding and regulation', 'overload and conflict in customer service', 'emotional disharmony and hurt'. They were dichotomized into ('normal' vs. 'risk') according to the K-ELS guideline. Presenteeism was measured using a dichotomous response category ('yes' vs. 'no'). Also, organizational climate (OC) was measured using a 5-items Organizational Climate Questionnaire (OCQ), and it was categorized into 'good' vs. 'bad' by using median values. To investigate moderating effect, four groups were created by the combination of organizational climate ('good' vs. 'bad') and emotional labor ('normal' vs. 'risk'); OC 'good' & EL 'normal' (*GroupI*), OC 'bad' & EL 'normal' (*GroupII*), OC 'good' & EL 'risk' (*GroupIII*), OC 'bad' & EL 'risk' (*GroupIV*). Multivariate logistic regression analysis was conducted to estimate the risk of presenteeism, and  $p < .05$  was considered significant.

**Results:** Of 4,871 firefighters, 30.6% (male: 29.0%, female: 41.4%) reported that they have experiences of 'presenteeism'. In male firefighters, the odds ratios for presenteeism of three groups were 2.181 for *GroupII*, 2.142 for *Group III* and 3.350 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI* in 'emotional demanding and regulation'. In 'overload and conflict in customer service', the odds ratios for presenteeism of three groups were 2.041 for *GroupII*, 2.597 for *GroupIII* and 4.747 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI*. Finally, in 'emotional disharmony and hurt', the odds ratios for presenteeism of three groups were 2.027 for *GroupII*, 2.529 for *GroupIII* and 4.136 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI*. In female firefighters, the odds ratios for presenteeism of three groups were 1.963 for *GroupII*, 2.487 for *GroupIII*, and 2.903 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI*. In 'emotional demanding and regulation', the odds ratios for presenteeism of three groups were 1.963 for *GroupII*, 2.487 for *GroupIII*, and 2.903 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI*. Finally, in 'emotional disharmony and hurt', the odds ratios for presenteeism of three groups were 1.832 for *GroupII*, 1.577 for *GroupIII* and 2.167 for *GroupIV*, respectively compared to *GroupI*, and they were significantly higher than *GroupI*.

**Conclusions:** In this study, we found the moderating effect of organizational climate on the association between emotional labor and presenteeism, and these results suggest that positive organizational climate plays a significant role in protecting the negative impacts of emotional labor on presenteeism.

**Key Words:** Emotional labor, Presenteeism, Organizational climate, Firefighters

1. Chang S. J, et al. The validation of Korean Emotional Labor Scale (K-ELS) and Korean Workplace Violence Scale (K-WVS) developed in 2013 for the measurement of the magnitude of emotional labor and workplace violence in the Korean work setting. (2014). Occupational Safety & Health Research Institute.
2. Amy S. Wharton. (2009). The Sociology of Emotional Labor. *Annu. Rev. Sociol*, 35, 147-165.
3. Ronald H. Humphrey, Blake E. Ashforth, James M. Diefendorff. (2015). *Journal of Organizational Behavior*, 36, 749-769.

## **The linkages between employee well-being and productivity in financial services – case Nordea Bank**

S. Nuutinen<sup>a</sup> (Mrs), S. Ahola<sup>a</sup> (Dr), J. Eskelinen<sup>b</sup> (Dr), RL. Larjovuori<sup>\*a</sup> (Mrs), K. Heikkilä-Tammi<sup>a</sup> (Dr), M. Kuula<sup>b</sup> (Prof)

<sup>a</sup> University of Tampere, Tampere, FINLAND ; <sup>b</sup> Aalto University, Helsinki, FINLAND

\* riitta-liisa.larjovuori@uta.fi

The association between well-being at work and productivity has attracted a lot of scientific interest during the past decades. The aim of the research is to study the role of work engagement and emotional exhaustion on productivity in financial services. We draw from the job demands-resources model (Bakker & Demerouti, 2017) positing that work engagement and emotional exhaustion have opposite effects on organizational outcomes, in this case, productivity; while work engagement is supposed to enhance productivity, emotional exhaustion is expected to lower it, respectively. However, studies focusing on the associations of well-being at work with productivity measured at the individual level are still scarce; therefore, this study contributes to filling this gap. It also examines the associations of employee well-being with self-rated performance.

The data were collected from Nordea Bank's operations in Finland. We focused on a sample of 305 bank employees from the following three work roles: Service advisors work in a contact centre helping customers via telephone and other online channels; financial advisers focus on the needs of customers applying for loans; and wealth advisors serve customers in demanding saving and investment issues. Data on well-being at work and self-rated performance were collected by means of online survey questionnaire at the beginning of the productivity measurement. The productivity of each employee was estimated by using the full time equivalent working time and sales quantities of the services during one year period. The estimation was based on a multivariate regression analysis that compared each employee with her/his peers having the same job role. The linkages between well-being at work and productivity were analyzed using regression analysis.

As regards self-rated performance, we found that work engagement was positively and emotional exhaustion negatively associated with it. Findings indicate that emotional exhaustion was related to a lower level of productivity. However, contrary to our expectations, work engagement was only weakly associated with a higher level of productivity, and only among wealth advisors. Based on these analyses we were able to estimate that the financial performance of the entire customer services could be increased by several percentages with practices preventing exhaustion.

It seems that employee's lowered well-being at work has detrimental effects on his/her productivity in the context of customer service in financial organizations. The magnitude of the potential productivity increase can be estimated also on a firm level to financially justify the measures to enhance well-being at work.

1. Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273.

## The moderating effect of non-material rewards on the association between emotional labor and suicidal ideation in Korean firefighters

DS. Hyun<sup>\*a</sup> (Mr), HY. Ryu<sup>a</sup> (Ms), DY. Jeung<sup>a</sup> (Dr), CY. Back<sup>a</sup> (Dr), SJ. Chang<sup>a</sup> (Prof)

<sup>a</sup> Yonsei University, Wonju, KOREA, REPUBLIC OF

\* hyonds@hanmail.net

**Objectives:** Emotional labor has been considered as a newly emergent job stress, and it plays a crucial role in developing employees' negative health outcomes such as physical discomfort, cardiovascular disease, depressive symptoms, sleep disorder and burnout. It, in turn, contributes to increase the risk of suicidal intention. On the other hand, various types of rewards while performing ones job duties including non-material rewards have been considered to reduce the risk of job stress. The purpose of this study was to investigate moderating effect of non-material rewards on the association between emotional labor and suicidal ideation in Korean firefighters.

**Methods:** Data were from the FRESH (Firefighter Research: Enhancement of Safety & Health) Study. A total of 17,852 firefighters whose main tasks were 'firefighting', 'rescue', 'emergency medical aid' and 'administration' were analyzed. Korean Emotional Labor Scale (K-ELS) was used for the evaluation of the exposures to emotional labor. It consists of 3 sub-factors: 'emotional demand and regulation', 'overload and conflict in customer service', 'emotional disharmony and hurt'. Cronbach's alphas for the five sub-scales of emotional labor were ranging from 0.765 to 0.929. Three sub-scales of emotional labor were categorized into two groups ('normal' vs. 'risk') according to the K-ELS guidelines. Non-material rewards were measured by 2 items, such as "My job provides me with many opportunities to help people in need" and "My job provides me with many opportunities to protect the community". Suicidal ideation was measured using a dichotomous response category ('yes' vs. 'no'). To investigate the moderating effect of non-material rewards, four groups (*GroupI*: non-material rewards 'yes' & emotional labor 'normal'; *GroupII*: non-material rewards 'yes' & emotional labor 'risk'; *GroupIII*: non-material rewards 'no' & emotional labor 'normal'; *GroupIV*: non-material rewards 'no' & emotional labor 'risk') were created by the combination of non-material reward ('yes', 'no') and the three sub-factors of emotional labor ('normal', 'risk'). The multivariate Poisson regression analysis was conducted, and  $p < .05$  was considered significant.

**Results:** Of 17,852 firefighters, 2.6% reported that they have thought of 'committing suicide'. The multivariate Poisson regression analyses show that the estimated relative risks (RRs) for suicidal ideation of three groups (*GroupII*: RR:2.393, 95% CI:1.802-3.178, *GroupIII*: RR:2.457, 95% CI:1.969-3.066, and *GroupIV*: RR:4.752, 95% CI:3.349-6.743) were significantly higher than *GroupI* in 'emotional demand and regulation'. Next, in 'overload and conflict in customer service', the estimated relative risks (RRs) for suicidal ideation of three groups (*GroupII*: RR:2.008, 95% CI:1.433-2.814, *GroupIII*: RR:2.315, 95% CI:1.870-2.866, and *GroupIV*: RR:5.431, 95% CI:3.664-8.052) were significantly higher than *Group I*. Finally, in 'emotional disharmony and hurt', the estimated relative risks (RRs) for suicidal ideation of three groups (*GroupII*: RR:3.421, 95% CI:2.576-4.545, *GroupIII*: RR:2.216, 95% CI:1.758-2.792, and *GroupIV*: RR:7.516, 95% CI:5.492-10.285) were significantly higher than *GroupI*.

**Conclusions:** In this study, we found the moderating effect of non-material rewards on association between emotional labor and suicidal ideation. These results indicate that non-material rewards might contribute to reduce the negative effects of emotional demanding on firefighters' suicidal ideation.

1. Chiew, K.S., Braver, T.S. (2011). Positive affect versus reward: emotional and motivational influences on cognitive control. *Frontiers in Psychology*. 2:279. doi: 10.3389/fpsyg.2011.00279
2. Dragano, N. et al. Effort-reward imbalance at work in relation to incident coronary heart disease: a multicohort study of 90,164 individuals. *Epidemiology* (2017).
3. Chang S. J, et al. The validation of Korean Emotional Labor Scale (K-ELS) and Korean Workplace Violence Scale (K-WVS) developed in 2013 for the measurement of the magnitude of emotional labor and workplace violence in the Korean work setting. *Occupational Safety & Health Research Institute*. 2014

## **From research to practice: What affects the implementation of knowledge on work organization in professional nursing?**

M. Melzer<sup>\*a</sup> (Dr), L. Winkler<sup>a</sup> (Mrs), A. Seidler<sup>b</sup> (Prof), U. Rösler<sup>a</sup> (Dr)

<sup>a</sup> German Federal Institute of Occupational Safety and Health (FIOSH), Dresden, GERMANY ; <sup>b</sup> Technische Universität Dresden, Chair "Occupational and Social Medicine, Public Health", Dresden, GERMANY

\* melzer.marlen@buaa.bund.de

Research on work organization in professional nursing has revealed several findings on organizational factors positively influencing the staffs wellbeing and health (e.g. Demerouti et al., 2000, Nei et al., 2015). In order to make these findings useful for practitioners, central aspects of work organization have been integrated an instrument for the analysis and evaluation of work organization in nursing: The manual "Good Ward Organisation - A guide for care facilities" (German Federal Institute of Occupational Safety and Health, 2016).

However, so far only little is known about the actual utilization of this instrument, its implementation, and factors determining either of it. The aim of our study therefore was to investigate what impacts the transfer of the instrument into practice.

We conducted a survey including all German hospitals and rehabilitation centres. The questions focused on structural conditions associated with safety and occupational health in the organization as well as on factors potentially affecting the transfer of knowledge from nursing science into practice. In addition, attitudes towards occupational safety and health were inquired. Finally, information about general characteristics of the organizations was gathered.

The results will be discussed with regard to the state of knowledge on implementation research.

1. Bundesanstalt für Arbeitsschutz und Arbeitsmedizin/ BAuA (Hrsg., 2016). Gute Stationsorganisation. Ein Leitfaden für Pflegeeinrichtungen. Dortmund.
2. Demerouti, E., Bakker, A.B., Nachreiner, F. & Schaufeli, W.B. (2000). A model of burnout and life satisfaction amongst nurses. *Journal of Advanced Nursing*, 32 (2), 454 – 464.
3. Nei, D., Snyder, L.A. & Litwiller, B.J. (2015). Promoting retention of nurses: A meta-analytic examination of causes of nurse turnover. *Health Care Management Review*, 40 (3), 237 – 253.

## Change management: how to preserve employee's health?

N. Brosset<sup>\*a</sup> (Dr), H. Leloix<sup>b</sup> (Dr), N. Lefebvre<sup>c</sup> (Mrs)

<sup>a</sup> PCD PEUGEOT CITROEN DS AUTOMOBILES, Sausheim, FRANCE ; <sup>b</sup> PCD PEUGEOT CITROEN DS AUTOMOBILES, Rennes, FRANCE ; <sup>c</sup> PCD PEUGEOT CITROEN DS AUTOMOBILES, Poissy, FRANCE

\* nicolas.brosset@mpsa.com

The world, and the world of work in particular, is in constant evolution. This is not new. But, the pace of these developments is constantly accelerating. Many employees have to face these transformations and the impact on their work experience is undeniable. The attitude of managers at all levels, who are responsible for carrying out these transformations, strongly influences the working conditions of their employees.

Facing this situation, based on concrete situations encountered by occupational health teams, we sought to identify the origin of those difficulties. This led us to set up a managerial line training programme, designed to help them better manage transformations, by changing their managerial attitude, by understanding the impact on their employees of a poorly supported change, and by identifying the levers at their disposal. We also had to change the way we approached the subject of psychosocial risks with the management. They perceived this issue as an obstacle or an additional burden in times of severe constraint. We led them to take ownership of the subject by using their own experience of change, by illustrating the human and operational consequences of a poorly accompanied change.

To date, 4000 managers have completed the first training cycle and the interest aroused by the topics covered, led us to implement an additional component at the end of 2018 to deepen their practices. This training cycle is now integrated in the mandatory management training career development and is a part of the psychosocial risk prevention system already in place for several years.

Preserving the health and developing the well-being at work of employees in times of major transformations requires the mobilization of the entire company and an essential cultural evolution. Through their operational knowledge of the field and close work in partnership with their various partners, occupational health actors have an important role to play in supporting this change.

1. Pr Dr KIESELBACH, HIRES, 2006, La santé dans les restructurations : approches innovantes et recommandations de principe
2. Michel GOLLAC, Marceline BODIER, 2011, Mesurer les facteurs Psychosociaux de risque au travail pour les maîtriser
3. Dr Patrick LEGERON, Ed O. JACOB, 2015, Le stress au travail : un enjeu de santé

## **The future of work: opportunities and challenges for the nordic models occupational health – consequences and challenges for the future working environment in the nordic countries**

J. Vleeshouwers\*<sup>a</sup> (Dr)

<sup>a</sup> National Institute of Occupational Health - Norway, Oslo, NORWAY

\* jolien.vleeshouwers@stami.no

The project proposal is based on call from the Nordic Council of Ministers, and is organized by Fafo in cooperation with a consortium of researchers from TEKES, the National Institute of Occupational Health (STAMI), the National Research Center for the Working Environment (NRCWE) and the Universities of Copenhagen, Gothenburg, Lund, Oslo, Reykjavik, Tammerfors, Aalborg, and Aarhus. Seven pillars will focus on consequences and challenges of the changing work environment for the future of work in the Nordic countries.

The Norwegian National Institute of Occupational Health will focus on one specific pillar out of seven pillars, namely pillar five; Occupational health - consequences and challenges for the future working environment in the Nordic countries. Within this pillar the main focus will be on «The future of the psychosocial work environment». Central question within this topic is; which new challenges should we pay particular attention to in the psychosocial work environment for the next 15-20 years? To answer this question both a literature study of existing research as well as a Delphi study with experts in the field will be conducted. Building on the literature study and the Delphi study, we will make a practical list of factors that should receive special attention in policy formation and efforts to monitor and improve the Nordic work environment.

Initial results from this two-fold investigation will be presented.

## **New technologies and digital competencies among people with visual impairment in the context of their wellbeing and professional activity**

K. Pawłowska-Cyprysiak<sup>\*a</sup> (Mr), K. Hildt-Ciupinska<sup>a</sup> (Dr)

<sup>a</sup> Central Institute for Labour Protection - National Research Institute, Warsaw, POLAND

\* kapaw@ciop.pl

Nowadays, information and communication technologies are very important in many areas of human life and activity. The Internet has become a means of communication, a source of knowledge and information, an element of social relations, education, professional activity and entertainment. An effective use of the Internet is a modern competence necessary for an independent and active functioning (Maszyk, Migaczewska; 2014). This competence constitutes one of the “digital competencies”. Digital competencies are information competencies which include such skills as searching for information and understanding the information but also usability and credibility assessment of a given information. This also includes use of computers and different electronic devices, use of various applications and programmes as well as use of the Internet and digital content production (Szymanek, 2014).

People with disabilities constitute a specific social group due to their needs and abilities determined by the health condition. New technologies are particularly important and significant for people with visual impairment (PFRON, 2017).

Computer and Internet access can have many different functions in the lives of people with disabilities. It provides opportunities for communication and social relations, which in turn leads to social integration, access to information, as well as allows for taking up or continuing education and employment opportunities. (Dejnaka, 2012). It should be noted that competencies of people with visual impairment are not only IT competencies but also digital competencies required to operate assistive technologies (AT).

At the Central Institute for Labour Protection - National Research Institute a research on digital competencies of visually impaired people has been undertaken in the years 2018-2019. In 2018, an Individual In-depth Interview was conducted among 50 people with vision impairments. The goal of the study was to determine digital competencies necessary for everyday, independent functioning and professional activity. The mean age of the group was 43,3 years. The mean duration of disability was 29,6 years. The Individual In-depth Interview demonstrated that people with visual impairment have a fairly high level of confidence in their digital competencies, which they usually acquire through self-study or with the help of relatives or friends and less often during trainings and courses.

People with visual impairment also indicated that digital competencies are very important in today's world. These competencies guarantee a standard, independent functioning and living as well as an improved wellbeing. They play an enormous role in professional activity, education, mobility, allow to detect the light intensity or type of colour. Digital competencies also improve access to information.

1. Szymanek V. (red.) „Społeczstwo informacyjne w liczbach. 2014”, Ministerstwo Administracji i Cyfryzacji, Warszawa 2014;
2. Maszyk T., Migaczewska E. „Charakter użytkowania Internetu przez osoby niepełnosprawne i sprawne w perspektywie cyfrowego wykluczenia – analiza porównawcza”, *Studia Socjologiczne*, 2014, 2(213), s. 175-201; Dejnaka A. „Internet bez barier – accessibility oraz usability a potrzeby osób niepełnosprawnych”, *Niepełnosprawność-zagadnienia, problemy, rozwiązania*. Nr II/2012(3), s. 37-51
3. „Badanie potrzeb osób niepełnosprawnych. Raport końcowy”, Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych, 2017, [https://www.pfron.org.pl/fileadmin/Badania\\_i\\_analzy/Badanie\\_potrzeb\\_ON/Raport\\_koncowy\\_badanie\\_potrzeb\\_ON.pdf](https://www.pfron.org.pl/fileadmin/Badania_i_analzy/Badanie_potrzeb_ON/Raport_koncowy_badanie_potrzeb_ON.pdf) (dostęp na dzień 04.10.2018)



## **Assessment and perspective of the use of the GABO questionnaire for assessing the sound quality of open offices**

M. Pierrette\*<sup>a</sup> (Dr), P. Chevret<sup>a</sup> (Dr)  
<sup>a</sup> INRS, Vandoeuvre Les Nancy, FRANCE  
\* marjorie.pierrette@inrs.fr

In 2014, based on a partnership with INSA's acoustics laboratory and ANSES funding, the GABO questionnaire was launched. This questionnaire was created to supplement physical measurements when assessing the sound environment of open offices by taking into account the feelings and well-being of employees. It allows employees to be questioned according to 4 specific dimensions: the perception of their work environment in general, the perception of their sound environment, their perception of noise in general and the assessment of their health [1]. This questionnaire is currently available to companies on the INRS website and in the NF 31-199 standard [2] dedicated to the acoustics of open offices. Since its publication, a large number of companies in the French tertiary sector have seized it and use it not only to diagnose the annoyance at their workspace but also as a catalyst for exchanges between management, human resources and employees. Several of these companies have agreed to share the data collected on their offices with INRS, so that we now have a database of more than 1000 responses that allows us to draw up an overview of the relationship between the occupants of open spaces and their workspace (feeling of comfort, privacy, ideal working environment, sound atmosphere, etc.). This presentation will be in three parts. The first will focus on the birth of the questionnaire, namely the initial motivations, the requirements from the point of view of prevention as well as the theoretical foundations necessary for the development of this type of questionnaire. The second part will provide an overview of the importance of the questionnaire since its publication, which is measured both by the growing interest of companies in the questionnaire and by the relevance of its use for laboratory experiments. Finally, in the third part, we will present the prospects it offers for the coming years. Two areas of development are currently being discussed: its integration into an international standard on open office space (ISO WG 65) and the extension of the approach to all physical disturbances present on an open space (air quality, thermal comfort, etc.).

1. Pierrette, M., Parizet, E., Chevret, P., & Chatillon, J. (2014). Noise effect on comfort in open-space offices: development of an assessment questionnaire. *Ergonomics*, 58(1), 96-106. doi: 10.1080/00140139.2
2. NF-S31-199. (2016). Acoustique - Performances acoustiques des espaces ouverts de bureaux 014.961972, AFNOR.

## **Works forewomen : advantages and disadvantages to be a woman in a male environment.**

JL. Zylberberg\*<sup>a</sup> (Dr)

<sup>a</sup> APST BTP Région Parisienne, Paris, FRANCE

\* zylberberg@apst.fr

In 2016, in France, the building sector was composed of about 1,15 millions of workers. Female workers were about 138 000 (12% of total building workers). Among these female building workers, only 1 555 are direct project supervisors (1% of female building workers).

The majority of these direct project supervisors are less than 34 years old (68% of total) and usually are the only women in the building site.

Usually, during the occupational medicine consultations, these women don't talk about any sexual harassment or sexist acts from male colleagues but rather with symptoms of chronic musculoskeletal pains with sometimes analgesics addiction. More often, a story of mental harassment is expressed first during the consultation. If the occupational physician asks about the beginning of the work history in the same enterprise, the woman described the first attempts of sexual harassment or sexist acts which she rejected.

The crucial period in the work history of many female direct project supervisors is pregnancy. The long work hours with the psychosocial factors as high work intensity, non support of colleagues or superiors in case of work troubles, improve the risk of miscarriages. Many women have to stop to work weeks before the legal maternity leave.

The return from maternity is an other crucial period for these women. Sometimes, their building site where she worked before ended and they don't have any work during weeks because working organisation of her enterprise don't take into account the pregnancy. Even if the French law forbid dismissal during several weeks after a pregnancy, some enterprises dismiss for work disorganization.

Since 1989, date of the european directive about safety and healthy work places, the Evaluation Document of occupational risks have to mention all the risks even the sexist acts and sexual harassment (for these risks only since 2016), the enterprises often consider that the individual prevention must be planned first and not the collective prevention about work organisation.

## **Occupational Musculoskeletal Disorders in Tunisia: Socio-economic and preventive issues**

T. Khalfallah\*<sup>a</sup> (Prof), A. Mahfoudh<sup>a</sup> (Dr)

<sup>a</sup> Faculty of Medicine of Monasti, University of Monastir, Monastir, TUNISIA

\* taoufikhalfallah21@gmail.com

### **Summary**

In the developing countries, particularly in Tunisia, tax advantages and the reduced cost of workforce explained the relocation of manufacturing industries which was accompanied with a translocation of occupational morbidities, including upper limb MSDs, which substantially affect active woman.

MSDs represent the first occupational disease in Tunisia, accounting for 70% of occupational diseases compensated by the National Health Insurance Fund. Their progress shows an increase in MSDs since 1995, to represent a real problem of public health and work. MSDs are also a universal epidemic. This significant increase in the incidence of work-related MSDs is closely related to work progress and organizational factors. So that and due to several consequences of this occupational health problem, many models has been established to explain this problem and strategies was elaborated to prevent it. In Tunisia, since some years, occupational MSDs represent a priority of preventive program of occupational diseases, which have mobilized different organizations and preventive institutions.

1. Aouatef Mahfoudh Kraiem, K. Fennani, M. Akrouf, K. Taoufik. Determinants of occupational multisite musculoskeletal disorders: A cross sectional study among 254 patients. *Reumatismo* 2018 ; 70(2):92.
2. Aouatef Mahfoudh Kraiem, Hajer Hnia, Bouzgarrou Lamia, Mohamed Adnène Henchi, Taoufik Khalfallah. Impact socio professionnel de la libération chirurgicale du syndrome de canal carpien. *Pan Afr Med J.* 2016; 24: 234.
3. tms - ISST Tunisie. [www.isst.nat.tn/uploads/FCK\\_files/REVUE\\_43\\_FRANCAIS.pdf](http://www.isst.nat.tn/uploads/FCK_files/REVUE_43_FRANCAIS.pdf)

## Occupational musculoskeletal disorders in cleaning women: an underestimated risk

A. Mahfoudh\*<sup>a</sup> (Dr), C. Haj Sassi<sup>a</sup> (Dr), O. Jlassi<sup>a</sup> (Dr), O. Machgoul<sup>b</sup> (Dr), T. Khalfallah<sup>a</sup> (Prof)

<sup>a</sup> Faculty of Medicine of Monasti, University of Monastir, Monastir, TUNISIA ; <sup>b</sup> Faculty of Medicine of Monasti, University of Monastir, Monstir, TUNISIA

\* mahfoudhaouatef@gmail.com

**Objective:** study the profile and medico-legal consequences of MSDs among cleaning women.

**Material and method:** Descriptive study carried out over a period of 8 years and including all records of cleaning workers who consulted at the Department of Occupational Medicine at University Hospital of Mahdia-Tunisia. Data collection was performed using a pre-established survey form.

**Results:** 23 patients are identified with an average age of 45.21 years. Average seniority was 17.26 years. The occupational nuisances related to the risk of MSD were mainly hyper-solicitation of the upper limbs in 23 cases (100%), the heavy load bearing in 16 cases, a constraining posture in 13 cases Repetitive movement is reported by 12 patients. The main retained diagnoses were carpal tunnel syndrome (CTS) in 7 cases, shoulder tendinopathy in 9 cases, low back pain in 3 cases, epicondylitis in 2 cases, and 3 cases of cervico-brachial neuralgia. A declaration as occupational disease was made for eleven patients, four of whom were recognized and compensated. A professional reclassification was prescribed for 10 patients, performed in the workplace for 3 cleaning women. Keeping the same post was reported by 19 patients. Two patients received early retirement and 2 employees are resigned.

**Conclusion:** Despite a certain exposure to physical constraints and an increased risk of developing MSDs among cleaning workers, declaration and compensation of these affections as professional diseases still a real problem for the occupational physician, given the difficulty of objecting to the biomechanical constraints at risk of MSDs related to this workstation.

1. KUMAR, Rupesh et KUMAR, Shrawan. Musculoskeletal risk factors in cleaning occupation—A literature review. *International journal of industrial ergonomics*, 2008, 38 (2) :158-70.
2. Charles LE, Loomis D, Demissie Z. Occupational hazards experienced by cleaning workers and janitors: A review of the epidemiologic literature. *Work*. 2009;34(1):105-16.
3. Ono Y, Lagerström M, Hagberg M, et al. Reports of work related musculoskeletal injury among home care service workers compared with nursery school workers and the general population of employed women in Sweden. *Occupational and Environmental Medicine* 1995;52:686-693.

## Permanent night worker and vigilance disorder of nursing staff

A. Mahfoudh<sup>\*a</sup> (Prof), O. Jlassi<sup>a</sup> (Dr), N. Mars<sup>a</sup> (Dr), L. Bouzgarrou<sup>a</sup> (Dr), I. Rassas<sup>a</sup> (Dr), T. Khalfallh<sup>a</sup> (Prof)

<sup>a</sup> Faculty of Medicine of Monasti, University of Monastir, Monastir, TUNISIA

\* mahfoudhaouatef@gmail.com

**Purpose of the work:** evaluate the influence impact of permanent night shift on the vigilance of the nursing staff.

**Methods:** An exhaustive cross-sectional study, conducted at the University Hospital of Monastir-Tunisia, and it is about 92 care agents working permanently at night. The study of alertness is based on Epworth scale and the Super Lab program.

**Results:** The average age was equal to 42.53 years  $\pm$ 9.45 years with a sex ratio of 1.72. Nurses accounted for 72% of the whole of these agents.

The average score of alertness assessed with Epworth scale was equal to 14.5  $\pm$ 6. The use of the Super Lab software has allowed objectifying a tendency towards the increase in the average time of reaction of accomplishment of the simple task and the positive cueing task, which was evaluated while starting the shift, during the half time of the work and at the end of the shift. In addition, the average rates of errors evaluated at the beginning, at half-time and at the end of the work have increased for the 3 tests (simple task, positive and negative cueing tasks) without this difference being statistically significant.

**Conclusion:** Impaired alertness with an ascent of the error rate among fixed night shift workers is a reality. This calls into question the health of the paramedical staff but also the care safety provided by these teams. Hence, the importance of undertaking preventive measures at the organizational, collective and individual level.

1. GEIGER-BROWN, Jeanne, ROGERS, Valerie E., TRINKOFF, Alison M., et al. Sleep, sleepiness, fatigue, and performance of 12-hour-shift nurses. *Chronobiology international*, 2012; 29 (2):211-9.
2. BARKER, Linsey M. et NUSSBAUM, Maury A. Fatigue, performance and the work environment: a survey of registered nurses. *Journal of advanced nursing*, 2011, 67 ( 6):1370-82.
3. GEIGER-BROWN, Jeanne, TRINKOFF, Alison, et ROGERS, Valerie E. The impact of work schedules, home, and work demands on self-reported sleep in registered nurses. *Journal of Occupational and Environmental Medicine*, 2011,53(3): 303-7.

## Physical and mental quality of life in Tunisian hospital institutions

A. Mahfoudh<sup>\*a</sup> (Prof), M. Zaidi<sup>a</sup> (Dr), I. Rassas<sup>a</sup> (Dr), T. Khalfallah<sup>a</sup> (Prof)

<sup>a</sup> Faculty of Medicine of Monasti, University of Monastir, Monastir, TUNISIA

\* mahfoudhaouatef@gmail.com

**Introduction:** Nursing staff are exposed to an unfavorable work environment that includes, among other things, high psychological demands, poor interpersonal relationships and understaffing.

**Objectives:** The purpose of this work was to study the impact of professional constraints on the quality of life of caregivers.

**Methodology:** We conducted a cross-sectional study with 131 care staff of the district hospitals of Mahdia governorate in Tunisia over a period of 03 months. The collection of data was based on a previously completed survey form including socio-professional characteristics of participants. The quality of life was assessed in its mental and physical dimensions by the SF12 scale.

**Results:** Our population was predominantly female with a sex ratio of 0.59 and an average age of 41 years. Mental quality of life was impaired in 48% of health care workers with a mental health score <50. This alteration was significantly correlated with gender, age, job tenure and frequent interruption of care tasks. The physical component of quality of life was impaired in 61.8% of health care workers and statistically influenced by gender and poor team relationships.

**Conclusion:** The preservation of nursing health in the face of a work environment that seems to be pathogenic therefore appears to be a necessity. An ergonomic intervention on the environments and the work organization of nurses must be expected.

1. Kikuchi Y, Nakaya M, Ikeda M, Takeda M, Nishi M. Job stress and temperaments in female nurses. *Occup Med (Lond)* 2013 ; 63(2) :123-8.
2. Karkar A, Dammang ML, Bouhaha BM. Stress and burnout among hemodialysis nurses: A single-center, prospective survey study. *Saudi J Kidney Dis Transpl.* 2015; 26(1):12-8.
3. Bernal D, Campos-Serna J, Tobias A, Vargas-Prada S, Benavides FG, Serra C. Work-related psychosocial risk factors and musculoskeletal disorders in hospital nurses and nursing aides: A systematic review and meta-analysis. *Int J NursStud.* 2015; 52(2):635-48

## **Backfit a model of total workers health**

L. Vigna\*<sup>a</sup> (Dr), D. Conti<sup>a</sup> (Dr), C. Barberi<sup>a</sup> (Dr), G. Agnelli<sup>a</sup> (Dr), G. Bernardelli<sup>b</sup> (Prof), MR. Ingenito<sup>a</sup> (Dr), L. Riboldi<sup>a</sup> (Dr)

<sup>a</sup> Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, ITALY ;

<sup>b</sup> Milan State University, DISSCO, Milano, ITALY

\* luisellavigna@inwind.it

In agreement with ACOEM Guidance Statement (2011) and NIOSH TWH Program (2012) the project "Ospedale InForma" is a model of TWH composed by different and specific interventions promoting a healthy lifestyle carried on by the Occupational Medicine Unit.

Starting from an in-depth analysis of the working context and risks with the involvement of the various responsible parties as Health Professions Department, Nursing and Technical Areas and Coordinators of Operative Units, BackFIT project, was an educational program associated with adapted physical activity program for workers with low back pain.

A series of physiotherapeutic tests were used: Roland Morris Questionnaire (RMQ), Ovestry Disability Index , Tampa Scale of Kinesiophobia, Fear Avoidance Belief Questionnaire and Sit and reach test. In addition, were created an informative booklet with exercises and theory and an illustrative video. Both were available on the company intranet. At the end of the project was distributed a satisfaction questionnaire.

The project involved 99 workers of Ospedale Maggiore Policlinico divided into 3 editions: Sep-Nov 2017, Jan-Mar 2018, Mar-May 2018.

The program was structured in weekly sessions of about half an hour for seven consecutive weeks. Every session was composed by a small groups of people (max 8).

At the end of the intervention, 84% of the workers report an improvement in the lumbar movement, the 80% in lower back pain and 84% have benefited from the activity. T

he satisfaction questionnaire reveals that 100% of workers were satisfied, they would take part in the project again and recommended it to others.

In conclusion, we could state that BackFIT project responds to the WHP and good practices. In fact it was created starting from a multisectoral and multidisciplinary cooperation, directly involving workers, and with the aim of being an investment both for the health of workers and for the growth of the company.



## Evaluation of the standing desks provided following the advice of occupational physicians

S. Crespo Rica<sup>\*a</sup> (Ms), A. Piette<sup>b</sup> (Mr), C. Paternot<sup>a</sup> (Mrs)

<sup>a</sup> European Commission, Brussels, BELGIUM ;

<sup>b</sup> Service publique fédéral Emploi, Travail et Concertation sociale, Brussels, BELGIUM

\* Sagrario.CRESPO-RICA@ec.europa.eu

The Internal Service for Prevention and Protection at Work (ISPP) is part of the Office of Infrastructure and Logistics in Brussels (OIB) of the European Commission (EC). Its work is based on the Belgium's Act of 4 August 1996 on well-being of workers in the performance of their work and is responsible for 25,453 workers.

ISPP works in close collaboration with the Directorate General of Human Resources (DG HR) and in particular with the department HR.D. Health & Wellbeing - Working Conditions.

In 2015, the EC, through DG HR, launched the *fit@work* program, a cross-cutting and multi-annual health and well-being programme. The 2017-2020 action plan covers six areas: physical health, mental health, physical activity, physical working environment, work/life balance and social integration.

In the latest EC satisfaction survey in 2016, it was found that 47% of the EC staff did not find their workstation comfortable and ergonomic. For several years now, it has been decided, in collaboration with the occupational physicians, to provide people suffering from a musculoskeletal pathology with a height-adjustable table. Furthermore, following a study, a proposal of the *fit@work* program was to launch a pilot project to test standing desks for staff without a musculoskeletal pathology.

As part of my duties as ergonomist within the ISPP, I made an evaluation of the use of adjustable tables prescribed by the occupational physicians. I intended to comprehend if there were positive effects for people with the musculoskeletal conditions and whether the tables were regularly used.

To do this, after reviewing the scientific literature related to the subject, I first established a list of ninety-six (96) people to whom the occupational physicians had prescribed adjustable tables. These people were requested to answer a survey questionnaire. In a second phase, I analysed the work activities and working conditions of twelve (12) people.

The processing and analysis of the collected data made it possible to highlight that, almost unanimously, people who were prescribed the standing desk noticed a reduction of their pain and indicated the wish to keep the desk. It was also found that, on average, the table was used in a standing position for 3.6 hours on a working day of 8 hours, which is more than the average of people without a pathology mentioned in the literature review, who only stand 5% to 10% of their working time.

Finally, it should be noted that the respondents to the survey requested technical support during the installation of the table and a follow-up thereafter.

The result of this study proposes recommendations regarding the provision of adjustable tables.

1. Straker, L., Abbott, A., Heiden, M., Mathiassen, S.E., & Toomingas, A. (2013). Sit-stand desks in call centres: associations of use and ergonomics awareness with sedentary behaviour. *Applied Ergonomics*, 44(4), 517-522. doi:10.1016/j.apergo.2012.11.001
2. Pronk, N.P., Katz, A.S., Lowry, M., & Payfer, J.R. (2012). Reducing occupational sitting time and improving worker health: the Take-a-Stand Project, 2011. *Preventing Chronic Disease*, 9, E154. doi : 10.5888.pcd9.110323
3. Wilks, S., Mortimer, M., & Nylén, P. (2006). The introduction of sit-stand worktables; aspects of attitudes, compliance and satisfaction. *Applied Ergonomics*, 37 (3), 359-365. doi: 10.1016/j.apergo.2005.06.007

## **Burdens and barriers in professional careers of women versus men and their effect on mental health**

M. Warszevska-Makuch\*<sup>a</sup> (Dr), Z. Mockallo<sup>a</sup> (Ms)

<sup>a</sup> Central Institute for Labour Protection-National Research Institute, Warsaw, POLAND

\* mawar@ciop.pl

### **Aim**

The world of work is undergoing rapid intensive changes, and one of which them is the greater share of women in the labor market. The prevention of occupational deaths, injuries and work-related illnesses is important because of given the high costs borne by businesses, society and the individuals concerned in the event of occupational safety and health issues are neglected negligence. Continuous efforts are therefore needed to increase the effectiveness of preventive measures policies, both for men and women. However, changes and conditions of employment and life off work lifestyles may have different consequences for working women and men, including those related to their health. Part of EU policy is the promotion of equal rights for men and women in all areas - including health and safety at work. In view of the growing share of women in the EU labor market and EU plans to increase this share, it is extremely important to introduce gender into the research (Fagan, 2015). The aim of the project is to identify the burdens and barriers related to career development and to determine whether there are significant gender differences in this area. In addition, the relationship between these burdens and barriers and the with negative effects on mental health will be determined.

### **Methods**

The sample consisted of 600 white-collar Polish workers (including 50% of women) employed in sectors characterized by a gender imbalance, i.e. financial services as well as information and communication sectors. The research was of a cross-sectional character. The questionnaire used in the study included questions on about the following variables: demographic and social variables characteristics, work time, level of equality in the workplace and exposure to discrimination, gender stereotypes, work-home balance (reconciliation of work and family life / private life), psychosocial working conditions such as work requirements, control, clarity of role, wellbeing (mental health disorders, job satisfaction, burnout).

### **Results**

The preliminary results will be presented at the conference.

### **Conclusions**

The results of the research will allow to gain an in-depth knowledge on the burdens and barriers in career development, in the financial services and information and communication sectors, including gender differences. This knowledge can provide a valuable support for practitioners, i.e. employers, OSH specialists, HR specialists, and management staff.

## Well-being at work faced the question of workload

L. Ponge\*<sup>a</sup> (Mr)

<sup>a</sup> SECAFI, Bordeaux, FRANCE

\* ludovic.ponge@secafi.com

The digital transformation is going through all the society and the development of new forms of information and communication technologies (ICT) change the customer behavior, all that is profoundly transforming the customer relationship. Faced these changes, companies are moving their organizational models and redefining the principles for assessing the workload of teams. Also, the effects of ICT on work are increasingly documented (DARES, 2018) and it appears that their use is strongly correlated with a significant workload and mental burden. ICT have become since years indispensable "partners" in the work, via the couriers, the mobile peripherals or the management software packages, they seem to generate new constraints for the operators. As well, the issue of workload is at the heart of quality of life issues at work.

Therefore, the approach in terms of well-being at work requires questioning the place given to the issue of workload. Through the example of an intervention in the banking sector, we will present the central role played by the workload assessment process in the issue of well-being at work and health. We will discuss the need to rethink how to approach the issue of workload in companies and organizations, especially with Digital Transformation to design sustainable and developmental working conditions for individuals.

1. DARES (2018). Quels liens entre les usages professionnels des outils numériques et les conditions de travail ? Analyses n°029
2. Fournier PS., Montreuil S., Brun JP., Bilodeau C. & Villal J. (2009). Étude exploratoire des facteurs de la charge de travail ayant un impact sur la santé et la sécurité- Étude de cas dans le secteur des services IRRST.
3. Falzon, P. & Mollo, V. (2009). Pour une ergonomie constructive : les conditions d'un travail capacitant. *Laboreal*, 5(1), 61-69.

## **Stress in employees working in direct contact with the customer**

A. Najmiec\*<sup>a</sup> (Mr), Z. Mockallo<sup>a</sup> (Ms)

<sup>a</sup> Central Institute for Labour Protection - National Research Institute, Warsaw, POLAND

\* annaj@ciop.pl

The poster includes the result of the study on the sources and effects of stress in employees working in direct contact with the client as part of services related to: telephone customer service (n = 388), health care (n = 415), tax administration (n = 403), insurance (commercial and social) (n = 398).

Statistical analysis was carried out independently in five groups of employees related to work with the client in the following areas: psychosocial work conditions, sources of stress and physical and psychological consequences, differences between groups including types of activity, gender, age, and education. The results of the analysis showed differences both in the sources of stress and its consequences. Each study group has its own specificity of psychosocial working conditions, client relations, and demographic characteristics. They have also different consequences including symptoms of burnout, physical and mental well-being.

## **Determinants of health behaviour among men active on the labour market.**

K. Hildt-Ciupinska\*<sup>a</sup> (Dr)

<sup>a</sup> Central Institute for Labour Protection - National Research Institute, Warsaw, POLAND

\* kahil@ciop.pl

Health behaviour is one of the determinants of our health. The way in which people care for their health affects not only their health, but also their well-being, quality of life and work ability. The lifestyle and health behaviour have a significant impact on health, whereas a lack of pro-health behaviour may cause the risk of many diseases and mortality, especially among men. In order to check the attitudes of men towards health and health behaviour, a questionnaire-based research has been carried out among 600 men active on the labour market and 50 in-depth direct interviews have been conducted in the same group. Several tools were used: health behaviour was measured with the Positive Health Behaviour Scale (Woynarowska-Sołdan, 2012, Hildt-Ciupinska, 2009), work ability - with the Work Ability Index (Tuomi K. et al., 1998), work - life balance - with the Copenhagen Psychosocial Questionnaire (subscale "Work-life balance"), (Kristensen, Borg, 2005).

The studies indicate that men are interested in health and healthy lifestyle and also have a lot of theoretical knowledge on the topic. However their health behaviour is inconsistent. The obtained results indicate a difference between their declarations and the reality. The studies have also shown which factors determine their health behaviour. The positive health behaviours of men were associated with work-life balance, work organisation, positive opinions about life and work, and a good work ability. The in-depth interviews with men showed that they have no motivation for a healthy diet, physical activity or active leisure after work. In conclusion, there is a need for health education among men, especially in the workplace.

1. Woynarowska -Sołdan M., Białowska-Wziak D. Psychometric analysis of Positive Health Behaviours Scale for adults. *Problemy Higieny i Epidemiologii* 2012, 93 (2)
2. Hildt-Ciupinska K. Skala pozytywnych zachowań zdrowotnych dla kobiet. *Probl Hig Epidemiol* 2009, 90(2): 185-190
3. Tuomi K., Ilmarinen J., Jahkola A., Katajarinne L., Tulkki A.: *Work Ability Index*. Fiński Instytut Medycyny Pracy. Helsinki, 1998

## Promoting a healthy lifestyle among low educated shift workers with T2D: a personalized physiological and behavioral approach

L. Van Der Zwaan\*<sup>a</sup> (Mr), K. Oude Hengel<sup>3</sup> (Dr), W. Otten<sup>a</sup> (Dr), P. Bongers<sup>a</sup> (Prof), N. Wiezer<sup>a</sup> (Dr)

<sup>a</sup> TNO, Leiden, NETHERLANDS

\* [lennart.vanderzwaan@tno.nl](mailto:lennart.vanderzwaan@tno.nl)

**Background:** Diabetes is the result of the body being unable to effectively turn glucose into energy which leads to human suffering with profound consequences for companies and society. Type 2 diabetes (T2D) is by far (90%) the most prevalent type. An important risk factor contributing to the onset of T2D is shift work. Through a disturbed circadian rhythm and sleep deprivation the metabolic system is dysregulated as is the glucose response. Recent insights showed various T2D subtypes based on specific organ dysfunction. Lifestyle interventions tailoring these subtypes showed significant improvements in fasting glucose which is an indicator of efficiency of glucose regulation. Despite the high prevalence of T2D in low educated workers and the negative influence of shiftwork, T2D lifestyle interventions targeting low educated (shift) workers are lacking. Therefore this study aims to adapt a promising personalized lifestyle intervention (P4@Hillegom, tailored to subtypes of T2D) to low educated shift workers with T2D. The intervention will be implemented in a large steel company in the Netherlands.

**Methods:** The intervention will be adapted to low educated shift workers based on an iterative participatory action research design. In the first phase of the project core components of the P4@Hillegom intervention as well as behavioral change techniques targeting low educated workers will be identified - in literature and through participative sessions with the target group - and fitted into a first prototype. In the second phase this prototype will be tested in a pilot study resulting in a proof of principle. Additionally, the feasibility of this proof of principle will be tested in a small scale study among 16 participants. At baseline, participants will be assigned to one of seven phenotypes according to the type of insulin resistance and degree of beta-cell function: (1)hepatic insulin resistance, (2)muscle insulin resistance, (3)poor beta-cell function, (4)hepatic and muscle insulin resistance, (5)poor beta-cell function and hepatic insulin resistance, (6)poor beta-cell function&muscle insulin resistance, (7)poor beta-cell function and hepatic and muscle insulin resistance. Based on these phenotypes, participants receive a low-caloric diet, strength and endurance training or both during 13 weeks. Effectiveness will be studied using pre- and post-tests (baseline and after 13 weeks) including the following variables: HbA1c, fasting plasma glucose, body weight, BMI, work ability and self-perceived health. Within this study the implementation process will be systematically evaluated by applying the framework of Randall and Nielsen.

**Added value:** Findings of this study will provide valuable insights into the feasibility of promoting a healthy lifestyle among low educated shift workers with T2D. During our presentation, we would like to discuss on: (1) how to tailor this lifestyle intervention to heavy workplace settings with conditions such as shift work and high physical workload; (2) how to stimulate sustainability of a healthy lifestyle in this specific group of workers; and (3) how to organize cooperation between occupational health care and primary health care.

## **Challenge and hindrance job demands and employees' wellbeing. The role of subjective challenge and hindrance appraisal**

Z. Mockallo\*<sup>a</sup> (Ms), M. Widerszal-Bazyl<sup>3</sup> (Dr)

<sup>a</sup> Central Institute for Labour Protection - National Research Institute, Warsaw, POLAND

\* zomoc@ciop.pl

### **Introduction**

Job demands are one of the key concepts in the area of work related stress. European surveys alert that job demands level, such as time pressure or quantitative demands, is high in the EU and is causing stress amongst employees with all of its consequences (EWCS, 2017).

However, leading stress models that include the role of job demands, such as Demands-Control-Support (Karasek and Theorell, 1990) or Job Demands-Resources (Demerouti et al., 2001) have not always been confirmed in practice (e.g. Häusser et al., 2010; de Lange et al., 2003).

An interesting proposition to better understand the complicated relationships between job demands and employee wellbeing presented by Cavanaugh et al. (2000) is the concept of challenge and hindrance job demands. However, only few studies have included the role of subjective appraisal of job demands as challenges or hindrances.

### **Aim of the study**

The aim of the study was to analyse the subjective appraisal of job demands as a challenge and/or a hindrance and to analyse the relationship between challenge and hindrance job demands and employee wellbeing.

### **Method**

The research was carried out in 2018 in the form of questionnaire surveys (a cross-sectional study) in five Polish regions. The study group comprised 400 employees from health care, public transport and IT sectors.

Measures:

- An adjusted version of the Webster, Beehr and Love questionnaire (2011) was used to measure the subjective appraisal of hindrance/challenge job demands
- COPSOQ II (Petejrsen et al., 2011) was used to measure job demands, other psychosocial working conditions, as well as burnout and stress symptoms
- Three items from UWES (Schaufeli and Bakker, 2003) were used to measure work engagement.
- SWLS (Diener, Emmons, Larson and Griffin (1985) was used to measure life satisfaction

### **Results**

Results are being analysed and will be presented at the conference.



## Effectiveness of the Labour Inspectorates' enforcement tools to improve work environment and employee health – a cluster randomised controlled trial of Norwegian home care workers

AM. Indregard<sup>\*a</sup> (Dr), S. Knardahl<sup>a</sup> (Prof), H. Johannessen<sup>a</sup> (Dr)

<sup>a</sup> National Institute of Occupational Health, Oslo, NORWAY

\* anne.m.indregard@stami.no

**Background:** The labour Inspectorate uses different tools and strategies to enforce compliance with occupational health and safety (OHS) legislation and regulation and have a key role to ensure a healthy and safe work environment. It is uncertain if and to what extent labour inspections are effective and efficient to improve work environment and employee health. Therefore, it is a need to evaluate if and to what degree inspections or other enforcing activities (i.e. information and consultation) have an effect on psychosocial work environment and employee health. Further, to draw valid conclusions, there is an urgent need for better designed effect evaluations, such as randomised control trials.

**Purpose and aims:** the main purpose of the current research project is to evaluate the effects of the Labour Inspectorates' enforcement tools on psychosocial work environment and employee health among Norwegian home care workers. The current project aims to evaluate if and to what degree the Labour Inspectorates' enforcement tools contribute to:

1. Reduction of negative psychological and organizational exposures in the work environment
2. Reduction of occupational illness, disease and sickness absence among employees
3. Compliance with OHS legislation and regulation

**Study design:** The current research project has been designed as a longitudinal, cluster-randomized, controlled trial. The unit of randomization will be at group level (i.e. Norwegian municipalities) and the outcome measurements will be obtained from members of the groups (i.e. home care workers employed in the municipalities). The trial will be conducted with four arms and the eligible municipalities will be randomized to three different intervention groups and one control group. The three different interventions given by the Labour Inspectorate will be as following: (1) Conventional targeted inspection from the Labour Inspectorate; (2) Consultation material on psychosocial work environment submitted to the organization from The Labour Inspectorate; and (3) Consultation workshop on psychosocial work environment held by the Labour Inspectorate. To minimise the potential confounding effect from clusters the recommended minimum of clusters are 34 municipalities per trial arm (a total 136 municipalities will be needed in the study). All home care workers employed in the home care sector in the included municipalities will be invited to participate in the study. The effect of the different interventions on psychosocial work environment and employee health will be evaluated through longitudinal questionnaire surveys prior interventions and 6, 12 and 20 months post interventions. Alongside the effectiveness evaluation, a process evaluation will be conducted.

The project will start with enrolment of municipalities and recruitment of home care workers in December 2018 and the last follow-up assessment is planned in November 2020. A study protocol is planned published January 2019 and will be presented at the conference.

## Usability testing of a serious game for Musculoskeletal Disorders prevention

M. Zare\*<sup>a</sup> (Dr)

<sup>a</sup> UTBM, Montbeliard, FRANCE

\* mohsen.zare@utbm.fr

Musculoskeletal Disorders (MSDs) are common occupational diseases in western countries. In recent years, more than 80% of all diagnosed occupational diseases were MSDs in France [1], and the cost of MSDs was more than €1million [2]. Physical risk factors such as repetitive task and awkward postures are the leading causes of MSDs in various jobs [3].

Multidimensional ergonomic interventions need to reduce exposure to awkward postures. Previous studies proposed interventions on individuals such as participatory ergonomics and training as the practical approach for preventing MSDs [7-9]. However, the effect of ergonomic training sessions on reducing exposure to physical risk factors and the prevalence of MSDs is the matter of debate [10]. The industries need modern technologies such as digital tools and virtual reality to increase the chance of successful interventions. The awareness of the operators about their gestures/postures would help them to develop the coping strategy to regulate a task in a way to preserve their health. The aim of this study is, therefore, to produce such a device by combining virtual reality in a Serious Game (SG) allowing the operators to practice a scenario similar to the industrial tasks in a playful setting and having the feedbacks of the gestures/postures.

We created a database of postures and movements of industrial tasks as the base for developing the game scenarios. The experimental settings were the automobile and watchmaker industries. The principal tasks extracted from the automobile industry were packing away the bumper, preparing, painting and assembling different types of car bumpers. We included four operations of watchmakers in our study based on several visits to the workstations and discussions with stakeholders. Twenty automobile assembly operators (8 women and 12 men) and twelve women watchmakers consented to participate in this experiment. We used nine T-motion sensors to measure the upper limb joint angles continuously with the frequency of 64 Hz (TEA, Nancy, France). We registered ten cycle times of subjects' activity after they accustomed to the devices placed on their body segments and the camera installed near them (5 minutes).

The developed SG combined Virtual Reality (VR) and motion capture (MoCap) into a Serious Game (SG). The MoCap technology allows tracking the user and providing real-time posture analysis. The VR combined with SG offers a decontextualization to increase learning and motivation. The imagined scenario is a gear puzzle game that the users have to solve. The different elements of the game are places to mimic the real problematic work situations.

Once the game is over, users access a score screen that gives them the posture score. It visualizes problematic joints and shows if a user had the awkward postures over performing the scenario. User tests revealed that operators were motivated to play the SG. They kept the strategies to improve their posture that might reduce the risk of exposure to awkward postures.

**Keywords:** Musculoskeletal Disorders, Awkward Posture, Virtual Reality, Serious Game, Risk Prevention

1. van Eerd, D.; Cole, D.; Irvin, E.; Mahood, Q.; Keown, K.; Theberge, N.; Village, J.; St Vincent, M.; Cullen, K. Process and implementation of participatory ergonomic interventions: a systematic review. *Ergonomics* 2010, 53, 1153–1166, doi:10.1080/00140139.2010.513452.

2. Rivilis, I.; Van Eerd, D.; Cullen, K.; Cole, D. C.; Irvin, E.; Tyson, J.; Mahood, Q. Effectiveness of participatory ergonomic interventions on health outcomes: a systematic review. *Appl Ergon* 2008, 39, 342–358, doi:10.1016/j.apergo.2007.08.006.

3. Shuai, J.; Yue, P.; Li, L.; Liu, F.; Wang, S. Assessing the effects of an educational program for the prevention of work-related musculoskeletal disorders among school teachers. *BMC Public Health* 2014, 14, 1211, doi:10.1186/1471-2458-14-1211.

## Shift work-related physical capacity of Tunisian nurses.

I. Merchaoui<sup>a</sup> (Prof), I. Rassa<sup>a</sup> (Dr), C. Amri<sup>a</sup> (Prof), MA. Henchi<sup>a</sup> (Prof), T. Khalfallah<sup>\*b</sup> (Prof), M. Akrou<sup>a</sup> (Prof), N. Chaari<sup>a</sup> (Prof), L. Bouzgarrou<sup>b</sup> (Prof)

<sup>a</sup> University Hospital of Monastir, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA ; <sup>b</sup> University Hospital of Mahdia, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA

\* taoufikhalfallah21@gmail.com

**Aims:** To determine the influence of rotating shift work on physical working capacity of Tunisian nurses and to propose preventive measures.

**Methods:** A cross-sectional survey was carried out involving a representative sample of nurses and nursing assistants from the University Hospitals of Monastir and Mahdia-Tunisia. Data collection was based on a standardized questionnaire completed by a series of physical capacity tests: Maximum Grip strength, 30s sit-to-stand test, one leg test, Fingertip-to-Floor test, Saltsa test and peak expiratory flow. Work ability was assessed through the Work Ability Index (WAI).

**Results:** A total of 293 nurses and nursing assistants participated in the study with a sex ratio of 1.061. The mean age was about 44.26 years for the participating nurses working in daytime schedule and about 41.65 years for those working in shift time schedule. Mental and physical loads were heavily perceived in shift healthcare workers ( $p=0.01$ ;  $p=0.02$ ). The maximum grip force was stronger in rotating shift work nurses ( $p=0.0001$ ). Regarding to the seniority subgroups in each kind of work schedule, the Body Mass Index was increasing with seniority in both schedules. All physical tests were better in less than ten-year groups. Peak Flow and grip strength were significantly better in less than ten-year seniority in shift work group.

**Conclusion:** There is a need to improve the design of the existing shift systems and to reduce as much as possible shift schedule as well as to avoid shift schedule for over-10-year-seniority nurses.

**Key words:** shift work- nurses- physical capacity.

1. Kenny, G. P., Groeller, H., McGinn, R., & Flouris, A. D. (2016). Age, human performance, and physical employment standards. *Applied Physiology, Nutrition, and Metabolism*, 41(6 (Suppl. 2)), S92–S107. <https://doi.org/10.1139/apnm-2015-0483>
2. Kenny, G. P., Yardley, J. E., Martineau, L., & Jay, O. (2008). Physical work capacity in older adults: Implications for the aging worker. *American Journal of Industrial Medicine*, 51(8), 610–625. <https://doi.org/10.1002/ajim.20600>
3. Merchaoui, I., Bouzgarrou, L., Mnasri, A., Mghanem, M., Akrou, M., Malchaire, J., & Chaari, N. (2017). Influence of shift work on the physical work capacity of Tunisian nurses: a cross-sectional study in two university hospitals. *The Pan African Medical Journal*, 26, 59. <https://doi.org/10.11604/pamj.2017.26.59.11279>

## Health-related quality of life determinants during tunisian medical internship

I. Merchaoui<sup>a</sup> (Prof), I. Rassas<sup>a</sup> (Dr), T. Khalfallah\*<sup>b</sup> (Prof), MA. Henchi<sup>a</sup> (Prof), M. Akrou<sup>a</sup> (Prof), N. Chaari<sup>a</sup> (Prof), C. Amri<sup>a</sup> (Prof)

<sup>a</sup> University Hospital of Monastir, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA ; <sup>b</sup> University Hospital of Mahdia, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA

\* taoufikhalfallah21@gmail.com

**Background:** Medical internship has been considered the best form of professional training for doctors thus various determinants impact mental and physical quality of life of medical interns.

**Aims:** to assess the quality of life of medical interns and to identify associations with socio demographic and occupational factors.

**Method:** A cross-sectional anonymous, survey involving 331 interns has been conducted in 2 university hospitals. Besides the short form of Health survey standardized questionnaire assessing the mental and physical quality of life, we collected demographic, occupational and health data.

**Results:** Determinants of the interns' physical quality of life were smoking (0.07), suicidal thoughts ( $p=0.07$ ), psychosomatic complaints ( $p=0.001$ ) and satisfaction in relation to occupational expectations in the department ( $p=0.001$ ). Mental quality of life was statically influenced by psychosomatic complaints ( $p=0.002$ ), suicidal ideation ( $p=0.005$ ) and professional expectations ( $p=0.001$ ). After removal of all the variables that were not independently associated to mental and physical quality of life, factors accounting for 8.7% of the variance in physical quality of life were: psychosomatic complaints ( $p=0.001$ ) and satisfaction in relation to occupational expectations in the department ( $p=0.02$ ) and those accounting for 6.5 % of the variance of interns mental quality of life were suicidal thoughts ( $p=0.009$ ) and occupational expectations in the department ( $p=0.002$ ).

**Conclusion:** Medical internship is a transition from the student training to a real medical exercise mostly depending on the organizational occupational aspects and technical resources. Further management efforts should be planified to enhance interns' quality of life on both mental and physical sides.

**Key words:** quality of life- interns- mental health

1. Blitz, J. B., Rogers, A. E., Polmear, M. M., & Owings, A. J. (2017). Duty Hour Compliance: A Survey of U.S. Military Medical Interns and Residents. *Military Medicine*, 182(11), e1997?e2004. <https://doi.org/10.7205/MILMED-D-17-00105>
2. C, S., Braganza, D., & Edwin, N. (2014). Quality of life among interns at a southern Indian tertiary care hospital: a cohort study. *The National Medical Journal of India*, 27(4), 214?216.
3. Parr, J. M., Pinto, N., Hanson, M., Meehan, A., & Moore, P. T. (2016). Medical Graduates, Tertiary Hospitals, and Burnout: A Longitudinal Cohort Study. *The Ochsner Journal*, 16(1), 22?26.

## Approved occupational accidents among short-haul drivers - three dimensional distribution of sick leave periods in coded accident-describing variables

M. Alderling<sup>\*a</sup> (Mr), A. Reiman<sup>b</sup> (Dr), M. Forsman<sup>c</sup> (Prof)

<sup>a</sup> IMM Institute of Environmental Medicine, Karolinska Institutet, Stockholm, SWEDEN ; <sup>b</sup> Industrial Engineering and Management, Oulu, FINLAND ; <sup>c</sup> Division of Ergonomics, KTH Royal Institute of Technology, Stockholm, SWEDEN

\* magnus.alderling@sll.se

### Introduction

The transportation industry employs a large number of workers in all European countries; for instance in Sweden 6.2% of the total labor market. Occupational injuries are more than double as common as in general, and even more common for short-haul (SH) drivers - for whom about 90% occur outside the cab.

The aim of this study was to investigate how the length of the accident-connected sick leave is distributed in pairwise combinations of three accident-describing variables.

### Methods

At the Swedish Social Insurance Agency (AFA), 6517 accidents among SH drivers were approved in 2005-2014. These accidents are not coded, but described in a few sentences. However, in 3188 of the accidents, coded information could be matched from the Swedish work environment authority, SWEA, which follows Eurostat's standard. For the merged set of accidents, two times three 3D-diagrams were created displaying the average, and the total number of sick leave days for each paired combination of the three variables: 'Contact mode of injury' (aggregated into five categories), 'Deviation' (five categories), and 'Material agent' (four categories).

### Results

'Deviation' and 'Contact mode of injury'

Four combinations had relatively high average sick leave days: Fall and Physiological stress (135 days); Technical failure and Trapped, constricted, crushed (124); Manual handling/overload and Trapped, constricted, crushed (95) and Loss of control - equipment and Physiological stress (82). When multiplying the number of cases with the average number of sick leave days, other combinations were more important; Fall and Impact - stationary object (92,857 days); Lost control - equipment and Trapped, constricted, crushed (19,044) as well as Lost control - equipment and Struck by object in motion (18,202).

'Deviation' and 'Material agent'

Three combinations had relatively high averages: Technical failure and Buildings (96 days), Fall and Machines and equipment (91) and Fall and Vehicles (85). Somewhat other combinations were more severe considering total days: Fall and Buildings (40,637 days); Fall and Vehicles (35,809) and Lost control - equipment and Machines and equipment (29,957).

'Material agent' and 'Contact mode of injury'

Four combinations had relatively high averages: Materials and waste material and Physiological stress (81 days); Buildings and Impact - stationary object (71); Vehicles and Impact - stationary object (69) and Machines and equipment and Impact - stationary object (65). The combinations with the largest total days were: Buildings and Impact - stationary object (42,385 days), and Vehicles and Impact - stationary object (36,611).

### Conclusions

In this study, the actual compensated sick leave register of AFA insurance was used together with the reliable coding of SWEA. Hence, analyses of these two combined registers resulted in precise and reliable results for variable combinations. For example for SH drivers, as seen before, Fall is involved in and causes both long average sick leave periods, and long total sick leave, however the combination having the longest average or the total sick leave are not the same. This kind of detailed information helps prioritizing preventive work.

## Training-related moral harassment and mental health outcomes in medical residents.

I. Merchaoui<sup>a</sup> (Prof), I. Rassas<sup>a</sup> (Dr), H. Mosbah<sup>a</sup> (Dr), C. Amri<sup>a</sup> (Prof), S. Miled<sup>a</sup> (Dr), MA. Henchi<sup>a</sup> (Prof), N. Chaari<sup>a</sup> (Prof), T. Khalfallah<sup>\*b</sup> (Prof), M. Akrou<sup>a</sup> (Prof)

<sup>a</sup> University Hospital of Monastir, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA ; <sup>b</sup> University Hospital of Mahdia, Faculty of Medicine of Monastir-Tunisia, Monastir, TUNISIA

\* taoufikhalfallah21@gmail.com

### Background & Aims:

Moral harassment has been a longstanding problem in medical sector, especially in residency training. This common problem can affect the work-ability and satisfaction of residents. Our study aims to assess the prevalence of moral harassment at workplace in medical residents and to determine the associate factors.

### Methodology:

A cross-sectional survey was conducted during two months in all the cohort of residents practicing in two university hospitals of the faculty of Medicine of Monastir in Tunisia. It was based on a comprehensive self-administered questionnaire with many items: social and occupational characteristics, the «Negative Acts Questionnaire» to assess the harassment at work and the “Hospital and anxiety depression scale” to evaluate the influence of moral harassment at work on the mental health.

### Results:

A total of 113 questionnaires were completed. Fifty-eight percent of the residents were victim of moral harassment according to the NAQ. The most frequent harassment acts were the quite unmanageable workload (64%), the attribution of tasks much lower than their competences or tasks with unachievable objectives or with hard to meet deadlines (31%) and the excessive monitoring (29.2%). Workplace moral harassment was statistically associated with serious family problems ( $p=0.005$ ), disappointment with the tasks they were assigned which fall well below their expectations ( $p=0.006$ ) and the failure to rest for psychosomatic or anxio-depressive symptoms ( $p=0.047$ ). The final model of logistic binary regression showed that dissatisfaction with the working conditions in the selected department or specialty ( $p= 0.008$ ) and anxio-depressive symptoms ( $p\leq 0.001$ ) were responsible in 19.4 % of the variability of residents' moral harassment.

### Conclusion:

Being abused during residency is a universal problem. Educational programs and effective preventive measures against this mistreatment are urgently required.

**Key words :** occupational health ; workplace; violence, moral policy.

1. Leisy, H. B., & Ahmad, M. (2016). Altering workplace attitudes for resident education (A.W.A.R.E.): discovering solutions for medical resident bullying through literature review. *BMC Medical Education*, 16(1). <https://doi.org/10.1186/s12909-016-0639-8>
2. Kulaylat, A. N., Qin, D., Sun, S. X., Hollenbeak, C. S., Schubart, J. R., Aboud, A. J., ... Han, D. C. (2017). Perceptions of mistreatment among trainees vary at different stages of clinical training. *BMC Medical Education*, 17(1). <https://doi.org/10.1186/s12909-016-0853-4>
3. Karim, S., & Duchcherer, M. (2014). Intimidation and harassment in residency: a review of the literature and results of the 2012 Canadian Association of Interns and Residents National Survey. *Canadian Medical Education Journal*, 5(1), e50-57.

## Everyday stressors causing distress in the workplace: A systematic review

L. Bolliger<sup>\*a</sup> (Mrs), J. Lukan<sup>b</sup> (Mr), N. Pauwels<sup>a</sup> (Dr), M. Luštrek<sup>b</sup> (Dr), D. De Bacquer<sup>a</sup> (Prof), E. Clays<sup>a</sup> (Prof)

<sup>a</sup> Ghent University, Ghent, BELGIUM ; <sup>b</sup> Jožef Stefan Institute, Ljubljana, SLOVENIA

\* Larissa.Bolliger@UGent.be

The contributors to chronic stress in the workplace have been well established in existing research. How everyday stressors translate to long-term risk factors for chronic stress remains an open question, however. In our literature review, we tackled the question of which everyday workplace experiences cause stress as their immediate consequence. We were interested in what is termed as acute, periodic, episodic, or everyday stress, that is, non-chronic types of stress. To capture day-to-day variations in these experiences, we included only studies that assessed stress repeatedly or monitored it continuously, such as by using ecological momentary assessment (EMA).

A search strategy was devised and applied in the following databases: CINAHL, Embase, ERIC, PsycARTICLES, PubMed, Scopus, and Web of Science. We deduplicated records in EndNote, assessed the titles and abstracts against eligibility criteria by using Rayyan and selected a minority of them for full-text screening. A subset of papers was included in the final review and evaluated for quality using the QualSyst tool at study level and using the GRADE approach at body of evidence level. The systematic review has been registered on PROSPERO (Registration Number: CRD42018105355).

We will compile a list of (non-chronic) stressors, i.e. daily experiences that elicited stress in the workplace. In case they are reported systematically enough throughout the literature, they will be rated in terms of their importance. Finally, subgroup comparisons will be carried out from the point of view of occupational classification.

Keywords: stress, work, ecological momentary assessment (EMA), day-to-day



## **Correlations between work demands-control-support and home-care workers' self-ratings of not being able to work until retirement**

I. Målvist\*<sup>a</sup> (Mrs), M. Alderling<sup>b</sup> (Mr), L. Hillert<sup>b</sup> (Dr), M. Forsman<sup>c</sup> (Prof)

<sup>a</sup> Stockholm City Council, Stockholm, SWEDEN ; <sup>b</sup> Karolinska Institutet, Stockholm, SWEDEN ; <sup>c</sup> KTH Royal Institute of Technology, Stockholm, SWEDEN

\* Ingela.Malqvist@sll.se

### *Background*

Working in the home-care sector is today one of the most common professions among women in Sweden and the number of employees needs to be even higher in the future. This means that the costs for the elderly are increasing. At the same time the number of workers in the in the home-care sector is stable or even decreasing because of demographic reasons, staff-turnover and because of the relatively high frequency of work-related illness. Therefore, it is important that the work conditions do not generate more "exits" in the home-care sector. If so, unproductive costs escalate for the society and threatens the quality and the continuity of the services to the elderly. The aim of this study was to investigate associations between demands, control and support, and the self-reported believe of not being able to remain in the home-care sector until retirement pension.

### *Method*

A cross-sectional study about work demands, decision authority, support, work health and presuming to work until retirement pension, was conducted and answered by 357 employees within different providers in the Stockholm county council. The method used in the analysis was Prevalence Proportion Ratios (PPR). The demand-control-support-model (Karasek & Theorell, 1990) was used for structuring the data into an established concept where the outcome was believing not being able to work in the home-care sector until retirement pension.

### *Results*

The outcomes show that believing not being able to work in the home-care sector until retirement pension correlate with the exposure of four high demands: stressful locomotion between the elderly, not having time to do all the work tasks, contrarious demands and not being able to handle unpredictable incidents with the elderly. The strongest confounder for believing not being able to work in the home-care sector until retirement pension referring to both high demands and support from the employer, was not having influence on the time scheduling. There were no significant correlation between helping many elderly with different discomforts or illness, and believing not being able to work in the home-care sector until retirement pension.

### *Conclusion*

Referring to demand-control-support-model, lack of decision authority in time scheduling among respondents had a higher association to not believing being able to work in the home-care sector until retirement pension, than lack of support from the employer when having high quantitate and qualitative demands at work. The results emphasize the importance of worker involvement in the design of "realistic" time schedules.

## **Coping with chronic disorders in the workplace: Do age and gender matter?**

R. Lamontagne<sup>\*a</sup> (Ms), A. Delisle<sup>a</sup> (Mr), ME. Major<sup>a</sup> (Prof)

<sup>a</sup> Université de Sherbrooke, Sherbrooke, CANADA

\* Rosalie.Lamontagne@USherbrooke.ca

The prevalence of workers with chronic diseases is an important concern in many countries. Moreover, aging workers are more at risk of developing such conditions which is also a preoccupation since they are an experienced and valuable workforce. Women are also more likely to develop some types of chronic diseases. Understanding how workers with or at risk of developing chronic diseases manage to stay at work and face difficulties they meet, while taking age and gender into consideration, is essential to design proper interventions. The aim of this qualitative study was to identify coping strategies developed by workers with or at risk of developing chronic diseases to stay at work. In-depth interviews were conducted with 20 assembly-line workers, 10 women and 10 men, with or without a chronic disease (musculoskeletal, mental or somatic). Out of those 20 participants, 11 were 50 years old or under and 9 were over 50 years old. Data were analysed following systematic data coding procedures. The findings showed a variety of coping strategies to remain on the job (self-control, acquisition of skills, teamwork, etc.) despite little available job leeway. Some differences were found while comparing strategies used by workers 50 years old or under and workers over 50 years old. Differences were also found comparing women and men. Difficulties encountered by workers of different age group and gender about the work activity and organization reveal promising intervention avenues, such as workplace improvements, worker empowerment as well as considerations for intervention implementation itself. Striving for interventions tailored to the real work activity that are age and gender-sensitive will lead to the collective well-being.

## **Sense of gratitude, self-esteem and meaning in life as factors of quality of life among students in a Nigerian university**

C. Onuoha\*<sup>a</sup> (Dr), E. Idemudia<sup>a</sup> (Prof)

<sup>a</sup> NORTH WEST UNIVERSITY, MAFIKENG, Mafikeng, SOUTH AFRICA

\* nauche2010@yahoo.com

Although research have implicated psychological factors in life quality outcome, not much is known about this relationship among Nigerian youths. The current study, designed as a cross-sectional quantitative research investigated sense of gratitude, self-esteem and meaning in life influences on quality of life in a sample of school-going young persons in Nigeria. Participants comprised of 349 (female= 163, mean age =22.01, sd =5.13) conveniently sampled young persons who are registered in a public university in Nigeria. They completed a self-report questionnaire that comprised standardized measures of youth quality of life, sense of gratitude, self-esteem and meaning in life. The instruments were revalidated to determine cultural appropriateness for use with the study participants. Results indicated significant combined influence of sense of gratitude, self-esteem and meaning in life on youth quality of life. Result also showed that self-esteem and meaning in life contributed to life quality of youths. In line with the findings, we concluded that among young persons, self-esteem and meaning in life are necessary for them to enjoy enhanced quality of life. Prioritizing policy that give youths a sense of meaning in life was recommended.

# Authors index

<b>A</b>	Agnelli G.	162	Bolliger L.	176	
	Ahola S.	26, 79, 150	Bone K.	107	
	Aitkenhead P.	14	Bongers P.	21, 99, 168	
	Akrout M.	172, 173, 175	Bonnemain A.	27	
	Alasoini T.	31	Boot C.	21, 22, 42, 99, 111, 144	
	Alderling M.	69, 97, 122, 174, 177	Bordi L.	25, 64	
	Allisey A.	137	Bosma A.	144	
	Almansa J.	126	Boulet M.	51, 60	
	Amri C.	172, 173, 175	Bouwhuis S.	21, 99, 144	
	Anantagunathi P.	146	Bouwman J.	93	
	Andersen DR.	89	Bouzgarrou L.	160, 172	
	Andersen LP.	89	Braeckman L.	82, 119	
	Anema H.	125, 144	Brisson C.	88	
	Aublet-Cuvelier A.	35	Brongers K.	83	
	Auclair I.	60	Brosset N.	153	
	Augustin S.	102	Brouwer S.	83, 126	
	Aust B.	89	Burdorf A.	34, 39, 71, 111	
<b>B</b>	Babapour M.	100	Bültmann U.	126	
	Back CY.	149, 151	<b>C</b>	Cahour B.	133
	Bahiri S.	38		Caillé A.	66
	Bakhuys Roozeboom M.	44		Catley B.	107
	Bakker E.	42		Chari N.	172, 173, 175
	Banks C.	20, 62, 128		Chang SJ.	149, 151
	Barberi C.	162		Chari C.	146
	Barlet-Ghaleb C.	41		Chastang JF.	92
	Bartlett L.	116		Chauvet M.	36
	Batt S.	40		Chesley N.	17
	Beaujouan J.	27		Cheung HK.	128
	Bentley TA.	107		Chevret P.	156
	Bergman Rentzhog A.	97		Chosewood LC.	91
	Bernardelli G.	162		Chouaniere D.	84
	Bertrand N.	110		Christensen JO.	19
	Bingen A.	131		Christensen M.	58, 63
	Biron C.	86, 88		Clark L.	47
	Blackwood K.	107		Claudon L.	35
	Bobillier-Chaumon ME.	133		Clays E.	23, 119, 176
	Boini S.	84, 85		Codron R.	36, 38

Coenen P.	111, 136	Fida R.	47
Conti D.	162	Firket P.	82
Conway PM.	89	Fløvik L.	19
Cornelius B.	83	Forsman M.	46, 55, 69, 97, 122, 174, 177
Coutarel F.	27, 104	Forsyth D.	107
Crespo Rica S.	163	Foster T.	47
Cummings G.	70	Fouchy S.	36
<b>D</b> D'Hulster L.	82	Francke A.	42
Danuser B.	41	Frenk F.	134
Dawkins S.	114, 117	Friðriksson JF.	145
De Bacquer D.	23, 176	<b>G</b> Galharret JM.	66
De Clercq B.	119	Garnier-Daujard E.	68
De Korte E.	138	Gautier MA.	35
De Vroome EM.	98	Geuskens G.	21, 99
De Wijn N.	50	Gilbert MH.	60
De Wind A.	22	Gilek M.	148
Deeg D.	22	Gouvenelle C.	104
Delisle A.	178	Grolimund Berset D.	41
Den Broeder L.	103	Grosjean V.	106, 133
Dextras-Gauthier J.	60	Grzebyk M.	84, 85
Dhondt S.	29, 30	Guionie B.	74
Dieker A.	39	<b>H</b> Haider S.	141
Dima J.	60	Haj Sassi C.	159
Dodeler V.	49	Hankonen N.	108
Dridi M.	27	Hansez I.	82
Dyreborg J.	89	Hassaan Shoukat M.	141
Dziurla M.	85	Hasson H.	87
<b>E</b> Eekhout I.	71	Heikkila-Tammi K.	25
Eich S.	41	Heikkilä-Tammi K.	64, 79, 150
Einarsdóttir M.	72	Heino M.	108
Elfvig-Gustafsson IM.	105	Hemming SE.	142
Ellegast R.	135	Henchi MA.	172, 173, 175
Elliott KE.	114, 118	Hermans L.	45
Ellonen N.	24	Herrmann HJ.	134
Eskelinen J.	150	Hewko S.	70
Estabrooks C.	70	Hildt-Ciupinska K.	155, 167
<b>F</b> Fernet C.	80	Hillert L.	97, 122, 177
Fetherston A.	40	Hoekstra T.	83, 99
Fetherston C.	40		

Hogenelst K.	108	Khalfallh T.	160
Holtermann A.	16, 23, 136	Kilpatrick M.	116
Hrafnsdóttir S.	120	Klarmann Ziegelmann P.	147
Hren J.	143	Kleinert J.	135
Hulsegge G.	39, 103, 125	Knardahl S.	19, 170
Hulshof C.	103	Knittle K.	108
Hummel LN.	98	Korotóšb J.	43
Hunt W.	32	Kox J.	42
Hussain U.	141	Kraan K.	30
Huysmans M.	136	Kranenborg K.	138
Hyun DS.	149, 151	Krause N.	136
Hünefeld L.	78	Krauss-Hoffmann P.	123
<b>I</b> Idemudia E.	179	Krief P.	41
Ijzelenberg W.	39	Kuimet K.	43
Indregard AM.	170	Kuula M.	150
Ingenito MR.	162	<b>L</b> Laitinen J.	79
Innstrand ST.	61, 63, 96	Lamontagne A.	92
Ipsen C.	87	Lamontagne AD.	77, 137
<b>J</b> Jakubiec H.	74, 112	Lamontagne R.	178
Janssens H.	119	Larjovuori RL.	25, 150
Järvisa M.	43	Leaute R.	110
Jaspers Sø.	89	Lefebvre N.	153
Jemine M.	82	Leloix H.	153
Jeoffrion C.	66	Lerouge L.	132
Jeung DY.	149, 151	Lind C.	55, 97
Jlassi O.	159, 160	Lindahl Norberg A.	122
Johannessen H.	170	Lindstrom J.	33
Jonsdottir IJ.	95	Lohmann-Haislah A.	124
Jónsdóttir S.	145	Lukan J.	176
<b>K</b> Kaakinen M.	24	Lundin A.	46, 122
Kaeokaemchan Y.	146	Luštrek M.	176
Kangas H.	67, 129	<b>M</b> Machgoul O.	159
Karanika-Murray M.	87	Mahfoudh A.	158, 159, 160, 161
Karlsen IL.	89	Major ME.	178
Keegel T.	137	Mantha-Bélisle MM.	88
Kerlo-Brusset M.	35	Marchand A.	81
Ketels M.	23	Mars N.	160
Khalfallah T.	158, 159, 161, 172, 173, 175	Martin A.	115, 116, 117, 137
		Maslach C.	65

Mathiassen SE.	69	Otten W.	168
Mediouni Z.	41	Oude Hengel K.	71, 111, 168
Melzer M.	152	<b>P</b> Paagman H.	125
Merchaoui I.	172, 173, 175	Page K.	137
Merkouche W.	81	Papas A.	137
Meyer SC.	78	Parent-Lamarche A.	80
Michinov E.	49	Parent-Thirion A.	13
Miled S.	175	Paternot C.	163
Milner A.	77, 92, 137	Paty B.	133
Mockallo Z.	164, 166, 169	Pauwels N.	176
Mondor M.	88	Pawlowska-Cyprysiak K.	155
Moneger F.	139	Pierrette M.	156
Mora V.	36	Piette A.	163
Morand O.	133	Ponge L.	165
Mosbah H.	175	Port Z.	107
Murdoch J.	47	Pot F.	28
Mäkelä L.	54, 67, 101, 129	Preenen P.	30
Mäkiniemi JP.	26, 79	Proper K.	33, 39, 75, 103, 125
Måhlqvist I.	122	Punnett L.	77
Målvqvist I.	46, 97, 177	<b>Q</b> Quinn M.	117
<b>N</b> Najmiec A.	166	<b>R</b> Radaudeanu A.	85
Neil A.	116	Rafnsdóttir GL.	72
Niedhammer I.	92, 147	Ramioul M.	29
Niegia Garcia De Goulart B.	147	Rassas I.	160, 161, 172, 173, 175
Niehaus M.	109	Ratkajec T.	143
Nielsen K.	15	Rayer J.	36
Niks I.	45, 138	Reavely N.	137
Niks IM.	93	Reay T.	70
Noblet A.	137	Rees N.	47
Nuutinen S.	79, 150	Reiman A.	174
Nybacka M.	76	Reljic D.	134
Näsman O.	105	Renaud S.	81
<b>O</b> Oksa R.	24	Riboldi L.	162
Oksanen A.	24	Riethmeister V.	126
Oksanen T.	79	Rinaldo M.	41
Onuoha C.	179	Rix Lievre G.	104
Osvaelder AL.	76, 100	Robroek S.	34, 71, 111
Otahal P.	116	Roelofs P.	42
Ots P.	126	Rousset S.	27



Rusu D.	82	Too T.	77
Ryu HY.	149, 151	Trionfetti MC.	131
Rösler U.	152	Tómasson K.	145
<b>S</b> Sanderson K.	47, 115, 116	<b>U</b> Urrila L.	57
Sandsjö L.	55	<b>V</b> Van Dam L.	44, 45
Sarkar S.	32	Van Dam LM.	98
Schaafsma F.	144	Van De Ven B.	119
Schellewald V.	135	Van De Ven D.	34
Schelvis R.	44, 108	Van Den Berge M.	103
Schneider G.	48	Van Den Bossche S.	44
Schoellgen I.	52	Van Den Eerenbeemt J.	45
Schröder T.	59	Van Der Beek A.	21, 39, 42, 71, 99, 103, 111, 136
Schulz A.	52, 124	Van Der Doef M.	50, 73
Schöllgen I.	124	Van Der Doelen B.	76
Seidler A.	152	Van Der Hiele K.	73
Seiler K.	123	Van Der Noordt M.	22
Sekerka L.	94	Van Der Zwaan L.	44, 45, 168
Sellapin M.	49	Van Drongelen A.	138
Shreij J.	75	Van Egmond M.	45
Sigursteinsdottir H.	37, 53, 127	Van Egmond MP.	98
Sikora A.	48	Van Lenthe F.	111
Simola-Ström S.	105	Van Mechelen W.	125, 136
Skinner J.	47	Van Oostrom S.	33
Smith P.	137	Van Poel E.	23
Snorradottir A.	130	Van Zwieten MH.	93
Snorradóttir á.	120	Veldhuis GA.	93
Soares Xavier Oenning N.	147	Verlinden H.	121
St-Hilaire F.	88	Vigna L.	162
Straker L.	136	Viitala R.	54
Suarez-Thomas S.	139	Vincent P.	36
Sully M.	40	Vleeshouwers J.	154
Sultan-Taïeb H.	88	Vlerick P.	119
Suutari V.	67	Vézina M.	88
<b>T</b> Tamers S.	91	<b>W</b> Warhurst C.	32
Tammaing S.	103	Warnecke E.	115
Tanskanen J.	54, 129	Warszewska-Makuch M.	164
Tappin D.	107	Wei R.	40
Thibau I.	20, 128	Wendsche J.	124
Tisch A.	78		

Wessels C.	123	Wortelboer HM.	93
Whysall Z.	90	<b>Z</b> Zaidi M.	161
Widerszal-Bazyl M.	169	Zantinge E.	75
Wiezer N.	93, 138, 168	Zare M.	171
Williams J.	47	Zenoni M.	41
Winkler L.	152	Zopf Y.	134
Winslow C.	20, 128	Zylberberg JL.	157
Wirichai R.	146		
Witt K.	137		