Work and Health: Challenges for Cohort Studies
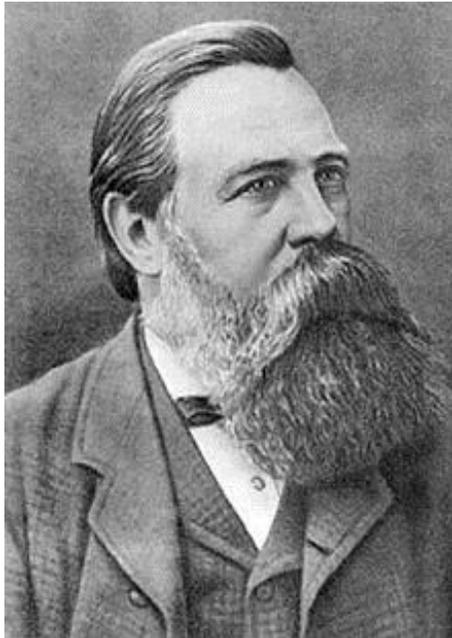
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NATIONAL RESEARCH
CENTRE FOR THE WORKING ENVIRONMENT

WAHE2016, Wuppertal, Germany, 19 to 21 September 2016

Since we are here in Wuppertal and talking about work and healthÅ

Friedrich Engels
* 28.9.1820 Barmen
« 5.8. 1895 London
Philosopher, Social Scientist,
Journalist, Businessman,
Communist revolutionary

in German (1845):
%Die Lage der arbeitenden Klasse in England+
in English (1887):
%The condition of the working class in England+
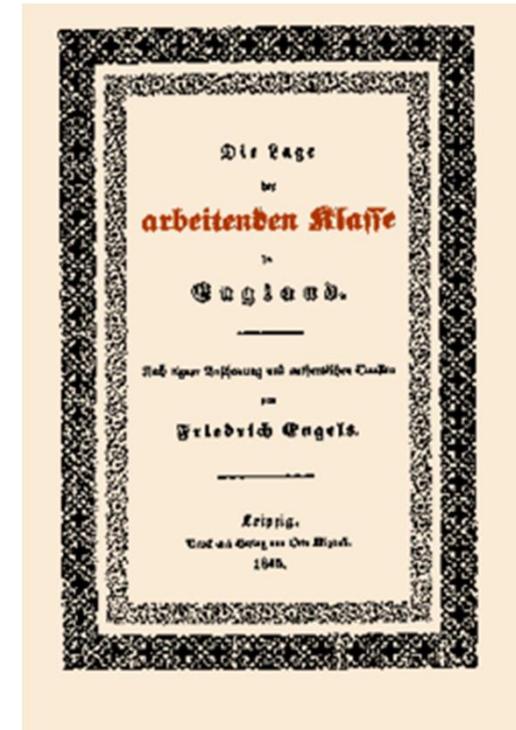
Work and Health: Major challenges

˝ Compared to the time of Friedrich Engels, we are examining today rather small relative risks, when it comes to work and health in high income countries.

˝ Psychosocial working conditions are in particular difficult to examine, because exposure is difficult to assess.

˝ Large-scale prospective cohort studies, ideally with repeated measures of both exposure and outcome are needed, but they are expensive

What do we know on psychosocial work environment and risk of disease?

1960s and 1970s:

˝ Pioneering research on work psychology and psycho-physiology in Sweden (e.g., Bertil Gardell, Marianne Frankenhaeuser)

˝ The emerging discipline of social epidemiology in the USA (e.g., John Cassel, S. Leonard Syme)

1970s and 1980s:

˝ Development and first empirical tests of the demand-control (job strain) model (Robert Karasek, Töres Theorell)

What do we know on psychosocial work environment and risk of disease?

Until 2000:

″ Development of more theoretical models (e.g., effort-reward imbalance) but, with some few notable exceptions, most research is cross-sectional, lack of large-scale cohort studies

Since 2000:

″ Increasing number of studies using large-scale cohorts, at least for some psychosocial exposures

Since 2012:

″ Publications on individual-participant data meta-analyses combining results of multiple cohorts (IPD-Work Consortium)

Job strain as a risk factor for coronary heart disease: a collaborative meta-analysis of individual participant data

Mika Kivimäki, Solja T Nyberg, G David Batty, Eleonor I Fransson, Katriina Heikkilä, Lars Alfredsson, Jakob B Bjorner, Marianne Borritz, Hermann Burr, Annalisa Casini, Els Clays, Dirk De Bacquer, Nico Dragano, Jane E Ferrie, Goedele A Geuskens, Marcel Goldberg, Mark Hamer, Wendela E Hooftman, Irene L Houtman, Matti Joensuu, Markus Jokela, France Kittel, Anders Knutsson, Markku Koskenvuo, Aki Koskinen, Anne Kouvonen, Meena Kumari, Ida E H Madsen, Michael G Marmot, Martin L Nielsen, Maria Nordin, Tuula Oksanen, Jaana Pentti, Reiner Rugulies, Paula Salo, Johannes Siegrist, Archana Singh-Manoux, Sakari B Suominen, Ari Väänänen, Jussi Vahtera, Marianna Virtanen, Peter J M Westerholm, Hugo Westerlund, Marie Zins, Andrew Steptoe, Töres Theorell, for the IPD-Work Consortium
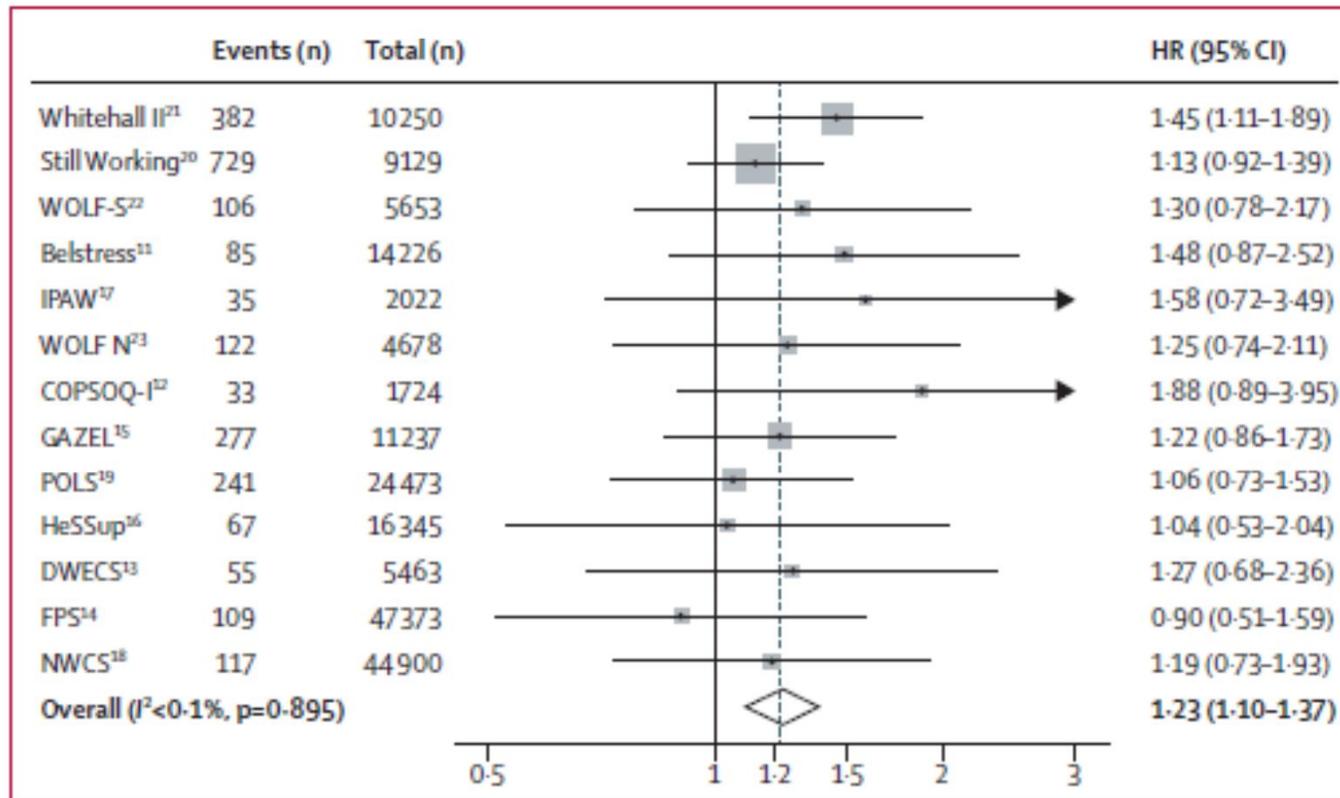
Figure 1: Random-effects meta-analysis of the association between job strain and incident coronary heart disease

Long working hours, socioeconomic status, and the risk of incident type 2 diabetes: a meta-analysis of published and unpublished data from 222 120 individuals
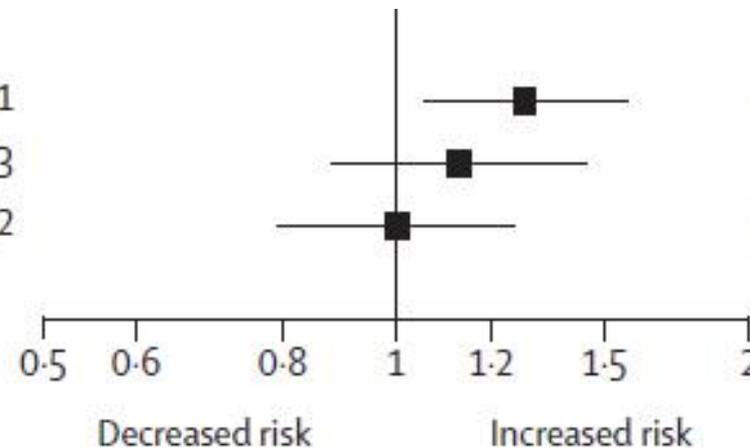
Mika Kivimäki, Marianna Virtanen, Ichiro Kawachi, Solja T Nyberg, Lars Alfredsson, G David Batty, Jakob B Bjorner, Marianne Borritz, Eric J Brunner, Hermann Burr, Nico Dragano, Jane E Ferrie, Eleonor I Fransson, Mark Hamer, Katriina Heikkilä, Anders Knutsson, Markku Koskenvuo, Ida E H Madsen, Martin L Nielsen, Maria Nordin, Tuula Oksanen, Jan H Pejtersen, Jaana Pentti, Reiner Rugulies, Paula Salo, Johannes Siegrist, Andrew Steptoe, Sakari Suominen, Töres Theorell, Jussi Vahtera, Peter J M Westerholm, Hugo Westerlund, Archana Singh-Manoux, Markus Jokela

Socioeconomic status

Socioeconomic status			
Low	1560	43 401	1·29 (1·06–1·57)
Intermediate	1500	58 653	1·13 (0·88–1·44)
High	1257	47 492	1·00 (0·80–1·25)

0·5 0·6 0·8 1 1·2 1·5 2

Decreased risk   Increased risk

Kivimäki M et al. Lancet Diabetes and Endocrinology 2015;3:27-34

Long working hours and risk of coronary heart disease and stroke: a systematic review and meta-analysis of published and unpublished data for 603 838 individuals

Mika Kivimäki, Markus Jokela, Solja T Nyberg, Archana Singh-Manoux, Eleonor I Fransson, Lars Alfredsson, Jakob B Bjorner, Marianne Borritz, Hermann Burr, Annalisa Casini, Els Clays, Dirk De Bacquer, Nico Dragano, Raimund Erbel, Goedele A Geuskens, Mark Hamer, Wendela E Hooftman, Irene L Houtman, Karl-Heinz Jöckel, France Kittel, Anders Knutsson, Markku Koskenvuo, Thorsten Lunau, Ida E H Madsen, Martin L Nielsen, Maria Nordin, Tuula Oksanen, Jan H Pejtersen, Jaana Pentti, Reiner Rugulies, Paula Salo, Martin J Shipley, Johannes Siegrist, Andrew Steptoe, Sakari B Suominen, Töres Theorell, Jussi Vahtera, Peter J M Westerholm, Hugo Westerlund, Dermot O'Reilly, Meena Kumari, G David Batty, Jane E Ferrie, Marianna Virtanen, for the IPD-Work Consortium
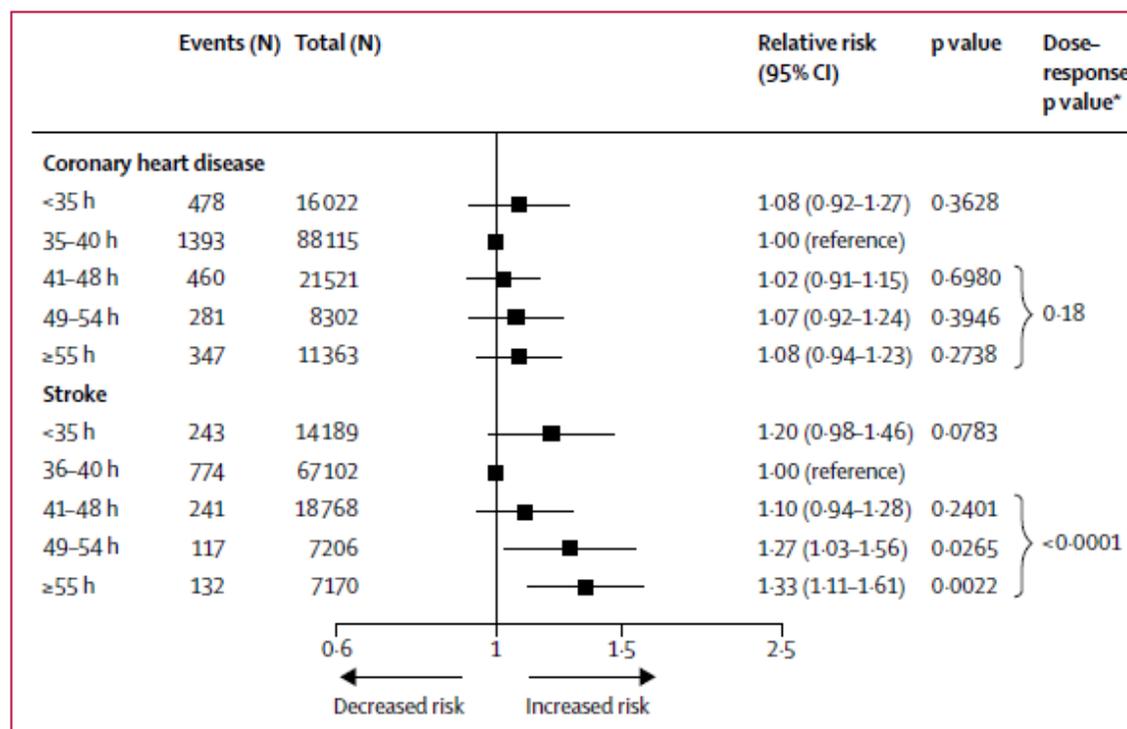
Figure 4: Association of categories of weekly working hours with incident coronary heart disease and stroke
Estimates adjusted for age, sex, and socioeconomic status. *For trend from standard to long working hours.

Kivimäki M et al. Lancet 2015;386(10005):1739-1746

Workplace bullying and depression

″ In 2008, two reviews conclude that no conclusion was possible because of lack of studies (Bonde JP, OEM 2008;65(7); Netterstrøm B et al. Epidemiol Rev 2008;30(1))

″ In 2015, a new review reported 7 cohort studies showing that bullying strongly predicted risk of depression (Verkuiil B et al. PLoS One 2015;10(8))
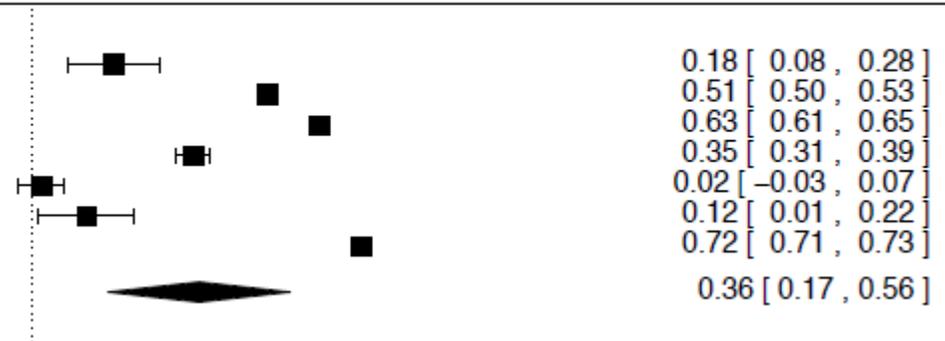
Author(s) and Year	Correlation [95% CI]
Depression	
Tepper, 2000	0.18 [0.08 , 0.28]
Kivimäki et al., 2003	0.51 [0.50 , 0.53]
Regulies et al., 2012	0.63 [0.61 , 0.65]
McTerman et al., 2013	0.35 [0.31 , 0.39]
Reknes et al., 2014	0.02 [−0.03 , 0.07]
Figueiredo–Ferraz et al., 2015	0.12 [0.01 , 0.22]
Gullander et al., 2015	0.72 [0.71 , 0.73]
Model for Subgroup	0.36 [0.17 , 0.56]

Some important progress has been made recently, but many challenges remain

˝ Most psychosocial working conditions have not been studied in a sufficient number of prospective cohort studies

˝ We know very little about dose-response and reversibility of exposure

˝ We usually have to rely on self-report when assessing psychosocial work environment, alternative measures are needed

˝ Need to broaden perspective on new epidemics (e.g., obesity) and new endpoints (e.g., dementia, healthy life expectancy)

Presentations in this symposium

˝ **Avoiding bias due to self-report by using a job exposure matrix**

Madsen IEH, Gupta N, Melkevik O, Holtermann A, Rugulies R. A job exposure matrix for psychosocial and ergonomic working conditions: Performance and applications to life course research

˝ **Studying the new epidemic of obesity at the workplace**

Stallmann C, Robra B-P, Swart E, March S. Obesity under employees of the lidA-study . Results of a linkage with primary and claims data

˝ **Studying the new measure of working life expectancy**

van der Noordt M, van der Pas S, Deeg, DJH, van Tilburg T. Working life expectancy calculations in poor and good functional health among Dutch 55- to 65-year olds

˝ **Studying under-challenges among older workers**

Gordo LR, Huxhold O, Heinitz K. Defining the right work contents: Are we making older workers (un)happy at work?