

Large scale studies of work stress and disease in Denmark – using stress biomarkers

Design, methods, and findings (at NFA)

Åse Marie Hansen (aamh@nrcwe.dk)



A 3-year prospective study of bullying in Danish workplaces

A. Hogh¹, C. Bloch², Å.M. Hansen¹,
E.G. Mikkelsen³ & A. Ortega¹

¹ National Institute of Occupational Health, Copenhagen,
Denmark

² Institute of Sociology, University of Copenhagen, Denmark

³ CRECEA, Horsens, Denmark



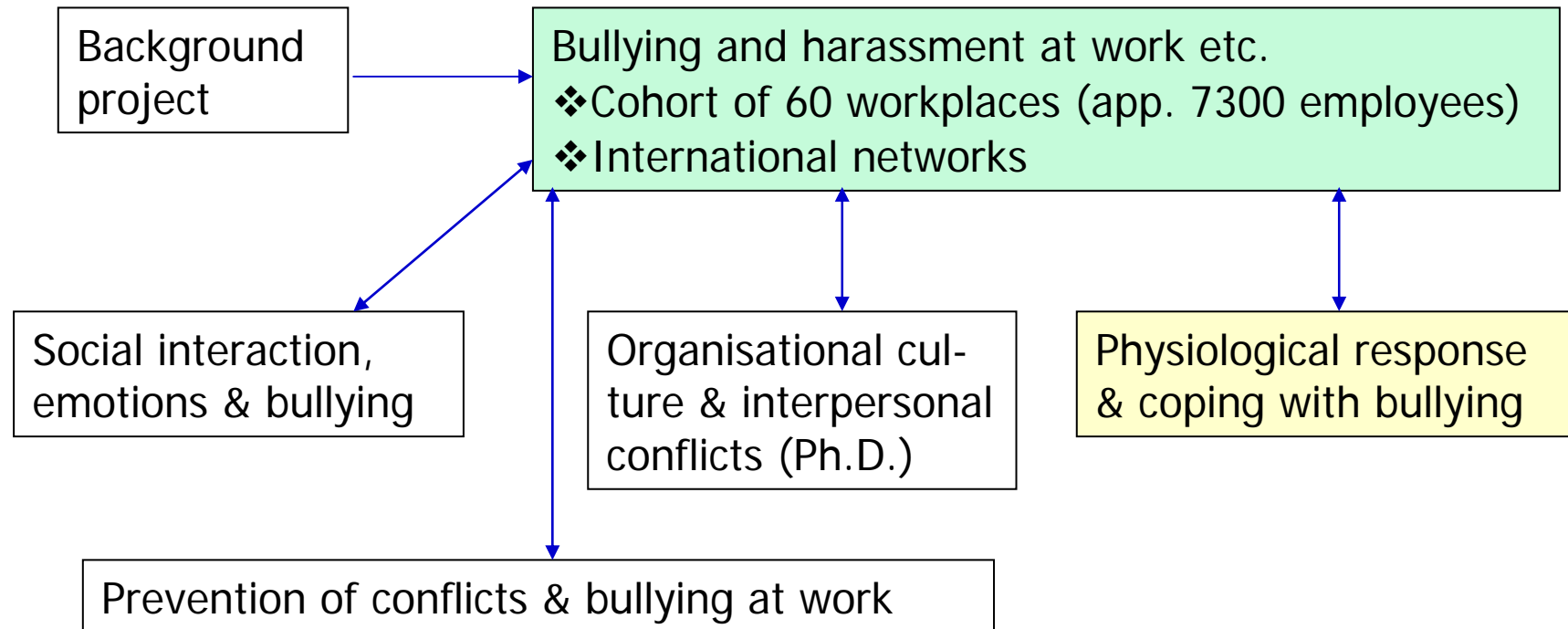
Purpose and objectives

- Overall purpose:
 - to prevent bullying in Danish work life
- Objectives:
 - to study organisational and individual risk-factors of bullying in in public and private organisations
 - to analyse physiological and health-related consequences of bullying and its consequences on work and social relations
 - to develop, test and evaluate methods to reduce and/or prevent bullying at work.

Methods

- A workplace survey – baseline and follow-up
- Interviews
- Field study
- Interventions
- Effect- and process evaluation

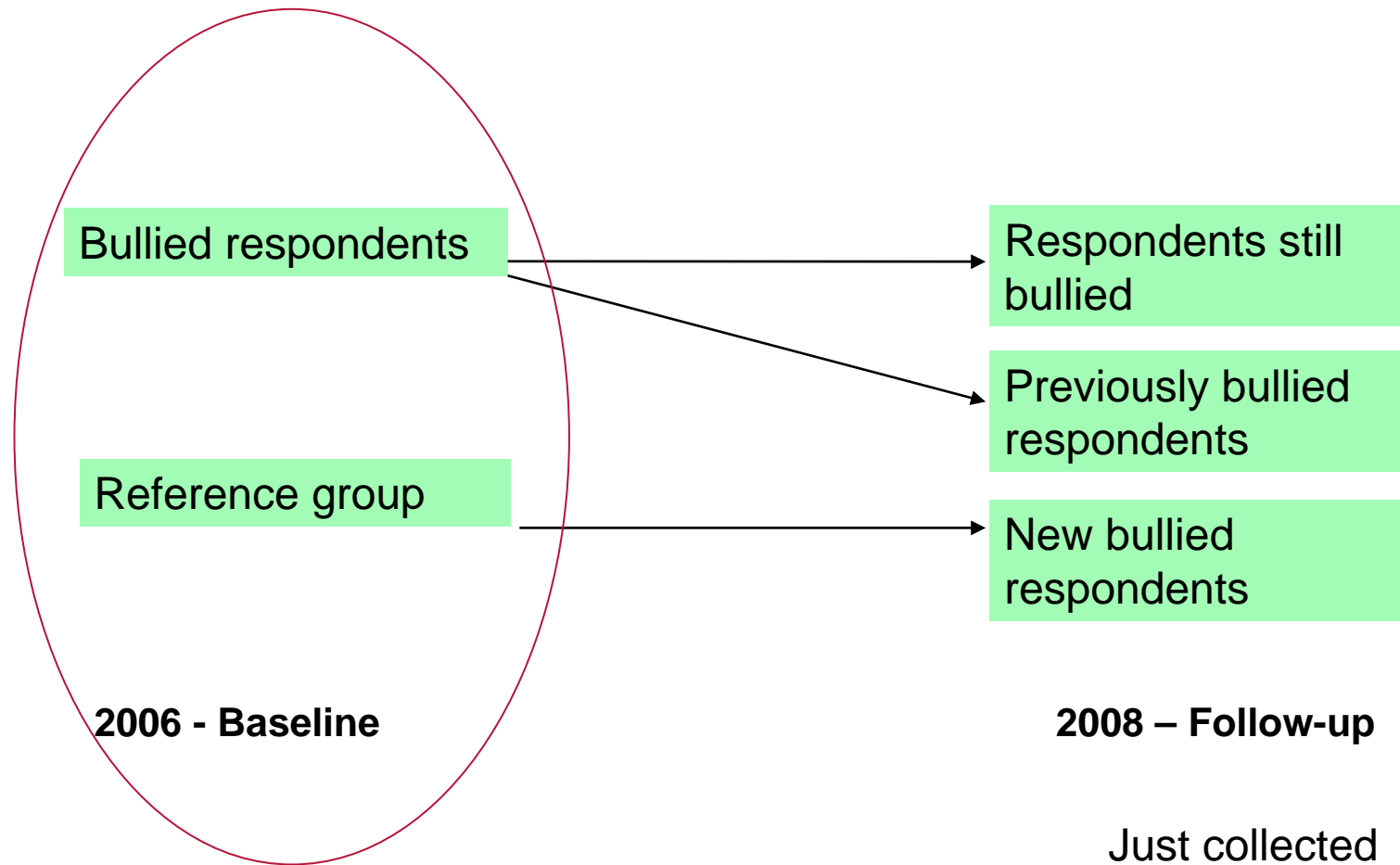
Overview of the project



A cohort of workplaces

- 60 workplaces: large & small, public & private (i.e. commerce, industry & service)
- Survey of psychosocial work environment:
 - Baseline i 2006
 - Ca. 7.500 persons (<http://www.ami.dk/samarbejde>)
 - Recruited with help from unions and networks etc
 - Follow-up in 2008

Design



The focus today is the baseline data

Background

Bullying at work, according to most definitions, takes place when someone, repeatedly over a longer period of time (usually 6 months), is exposed to negative acts from one or several others, in a situation where he or she for different reasons may have difficulties defending him- or herself against these actions.



Character of Bullying

Bullying may take different forms.

Direct bullying is aggressive acts that are aimed directly at the target, like e.g. as for example teasing, scolding, spreading rumours, and threats.

Indirect bullying may take the form of social isolation or withdrawal of necessary information.

Bullying may be

work-related (e.g. acts that make it difficult for the target to do his/her work) or

personal (e.g. offending teasing, rumours, slander, or sexual harassment)



The survey

- Working conditions
- Psychosocial work environment
- Support & management
- The Bullying Risk Assessment Tool (Giga & Hoel)
- NAQ-R & bullying etc. (Einarsen & Hoel)
- Conflicts
- Work-family interface
- Health & well-being (physical & psychological)
- SOC & NA
- Health habits

Physiological stress response

- Does bullying result in changes in level of cortisol (an early indicator of potential health effects: i.e. cardiovascular disease, depression, PTSD)?
- Does the victim's coping strategies moderate the relationship between bullying and changes in cortisol level?

Collection of saliva



Three times a day

- At awakening
- + 30 min after awakening
- At 20:00 hours

Fill in the label carefully with date and time of sampling

Mail the samples to NFA

Ethics

Project approved by:

- Data register
- The local ethics committee



Preliminary results from baseline



Bullying and sleep problems

- The targets of bullying used sleep-inducing drugs and sedatives more often than did the respondents who were not bullied

Varita SJWEH 2001

- The victims of bullying were more likely to have experienced significant stress recently ($p=0.025$), to be mentally exhausted at the end of the workday ($p=0.013$), to have significant sleep difficulties ($p=0.001$), and poor mental health ($p<0.0001$), and to be dissatisfied in their job ($p<0.0001$).

Rafnsdottir and Tómasson, Laeknabladid, 2004



Psychosocial work demands and sleep

More sleep problems are associated with:

- High demands
- Low control

- Unsolved conflicts
- Unsolved problems

Less sleep problems are associated with:

- Social support

Kalimo et al., Stress Med, 2000
Åkerstedt et al., J Psychosom Res 53(1), 2002
Åkerstedt et al., J Psychosom Res 53(3), 2002
Kecklund et al., Biol Psychol, 2004



Psychosocial work factors and bullying

Not only targets and bully/targets but also bystanders assessed their work environment more negatively than did non-involved employees, while perpetrators of bullying did not differ significantly from non-involved employees as regards their perception of the work environment.

Hauge et al, Work and stress 2007



Aims to examine

- Whether bullied persons, perpetrators, and witnesses have more sleep problems than a reference group
- Whether frequent bullying was associated with more sleep problems (a dose-response effect)
- If psychosocial work environment mediates the association between being bullied and having sleep problems



Study population at baseline

- 3382 employees
(67.2% women and 32.8% men)
- 60 companies in Denmark
(22 private and 38 public)
- Overall response rate was 46%.



Questions of bullying

A definition of bullying was listed ahead of the questions:

“Bullying takes place when employees are exposed to negative or offensive acts repeatedly over a longer period of time, which it is difficult to defend oneself against”.

Bullying: *“Have you been subjected to bullying at work within the past 6 month?”.*

We also asked if the participants had witnessed bullying or themselves bullied someone.

All items responded to on a five step scale:

1=never, 2=occasionally, 3=monthly, 4=weekly, 5=daily.



Identification of groups

	N	Age (years) M (range)
Bullied	206 (6,1 %)	46 (29-60)
Bullied and perpetrator	150 (5,4 %)	45 (30-60)
Perpetrator	62 (1,8 %)	45 (29-60)
Witnesses	525 (15,5 %)	46 (29-61)
Reference	2336 (72,1 %)	46 (29-61)

No significant difference in age between the groups



Men experienced more bullying than women

Bullied daily or weekly

1.3% of the women

1.7% of the men

Bullying monthly and seldom

7.8% of the women

12.9% of the men

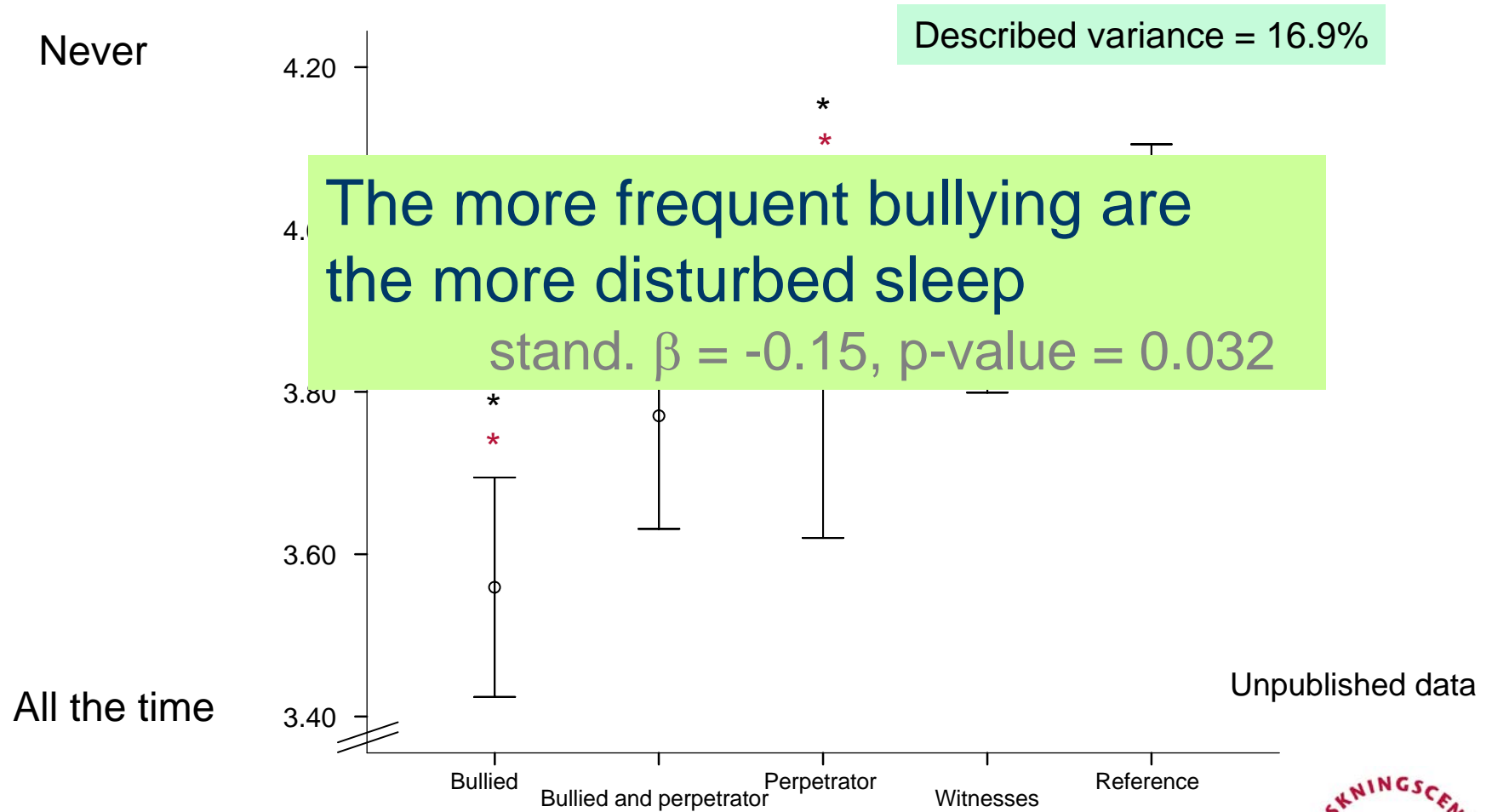
P-value < 0.000



Sleep problems during the past 4 weeks

- Disturbed sleep
 - *“How often did you sleep lightly?”*
 - *“How often did you have problems falling asleep?”*
 - *“How often did you wake up too early and could not fall asleep again?”*
 - *“How often did you wake up several times and were not able to fall a sleep again?”*
- Ease of awakening
 - *“How often did you have difficulties waking up?” (reversed)*
 - *“Did you get enough sleep?”*
- Quality of sleep
 - *How do you rate your overall quality of sleep?*

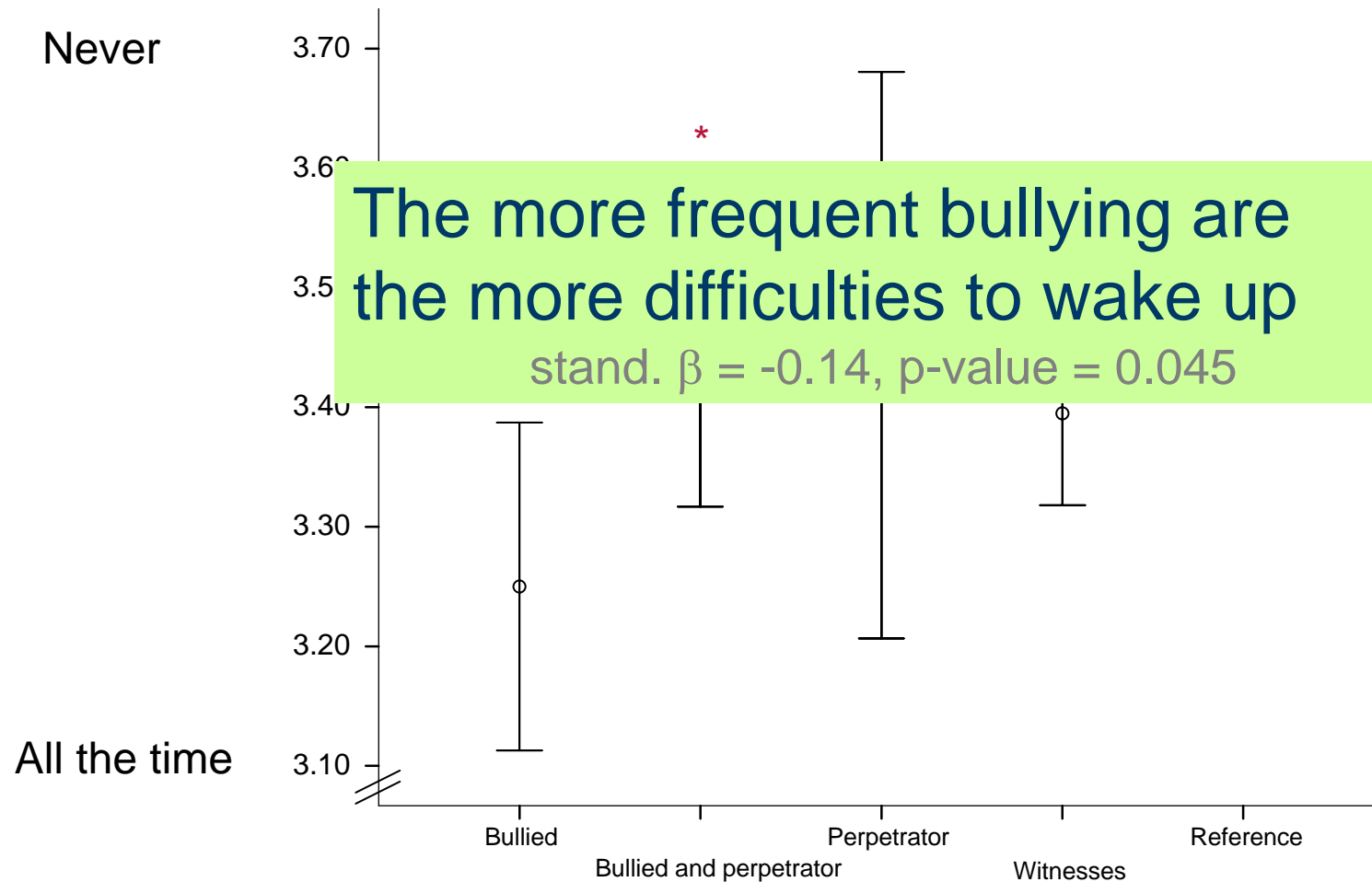
Disturbed sleep



* indicates significant difference to reference group,
* adjusted for perceived psychosocial work environment



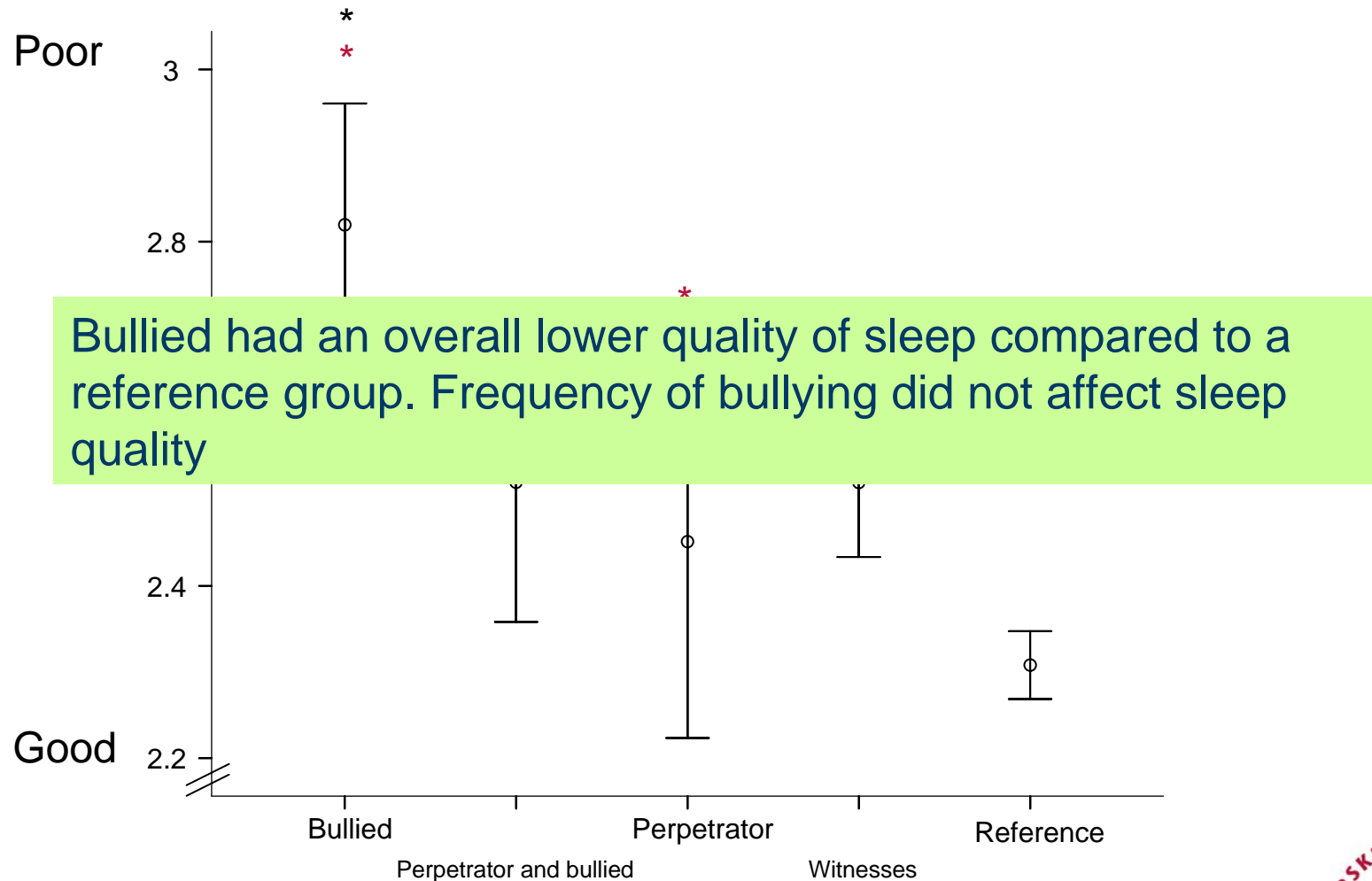
Difficulties to wake up



* indicates significant difference to reference group

* Adjusted for perceived psychosocial work environment

How do you rate your overall quality of sleep?

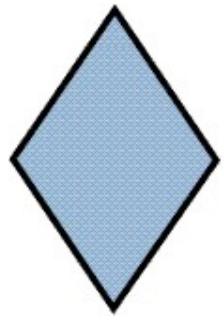


* indicates significant difference to reference group
* Adjusted for perceived psychosocial work environment

Conclusion

Compared to the reference group bullied respondents and witnesses report

- more *disturbed sleep*
- More *difficulties to wake up*
- Worse *quality of sleep*
- Adjusted for the psychosocial work environment, the difference between witnesses and reference group in *difficulties to wake up* disappeared

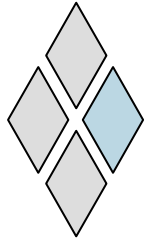


PRISME-projektet

Mental risk factor in the working environment and biological mechanisms for development of stress,, fatigue and depression

Project supported by
'Arbejds miljø forskningsfonden' and
'Lundbeckfonden' in Denmark





PRISME-project: organisation

Dept of Occup Med, Århus Hospital

Henrik Kolstad, Linda Kærlev, Jens Peter Bonde

Dept of Occup Med, Herning Hospital

Anette Kærgaard (project manager), Johan Hviid Andersen

Dept of Occup Med, Glostrup Hospital

Jane Frølund Thomsen, Sigurd Mikkelsen

Centre for Psychiatric Science, Århus Hospital, Risskov

Ole Mors, professor, Henriette Buttenschön

The National Research Centre for the Working Environment

Åse Marie Hansen, Reiner Rugulis, Palle Ørbæk



PRISME project

Baseline 2007

- 10039 subjects were invited
- 4477 returned the questionnaire
- 4411 returned the saliva questionnaire and saliva samples
- Address unknown 46
- Denials 478
- Dead 1



Purpose

PRISME is a longitudinal study with the object of investigating how work-related psychosocial strains impact on the risk of developing stress, burnout and depression.



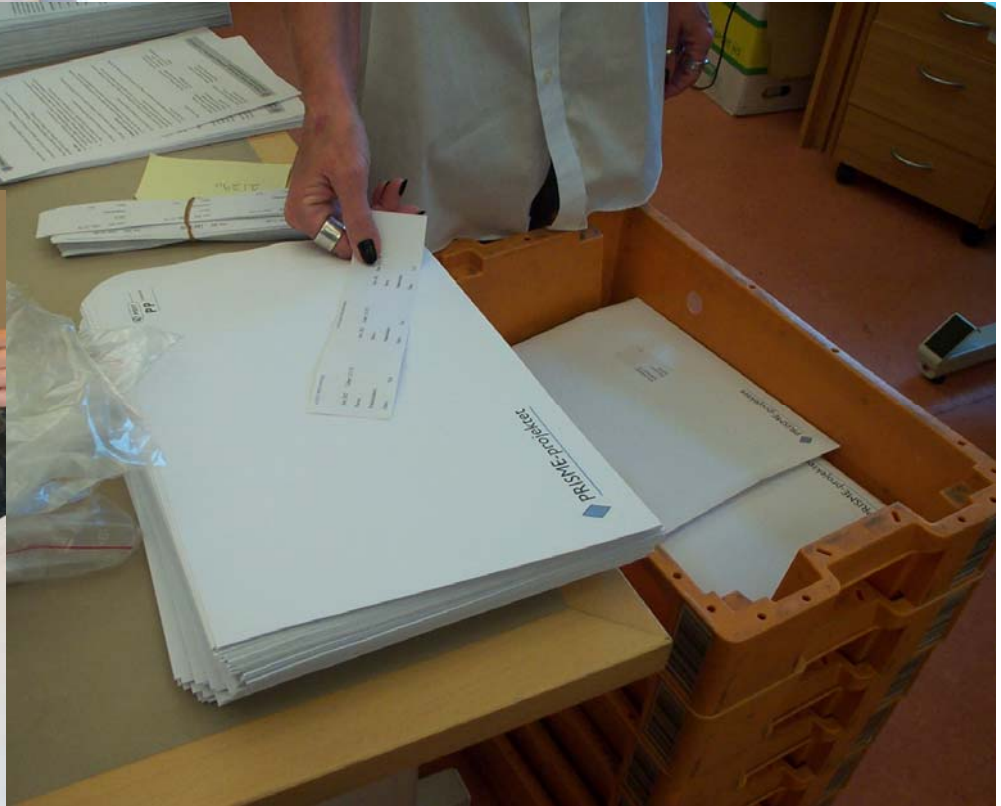


Packing of material





Packing of material





Mailing Post DK





Scanning questionnaire



Scanning questionnaire





Registration of saliva samples

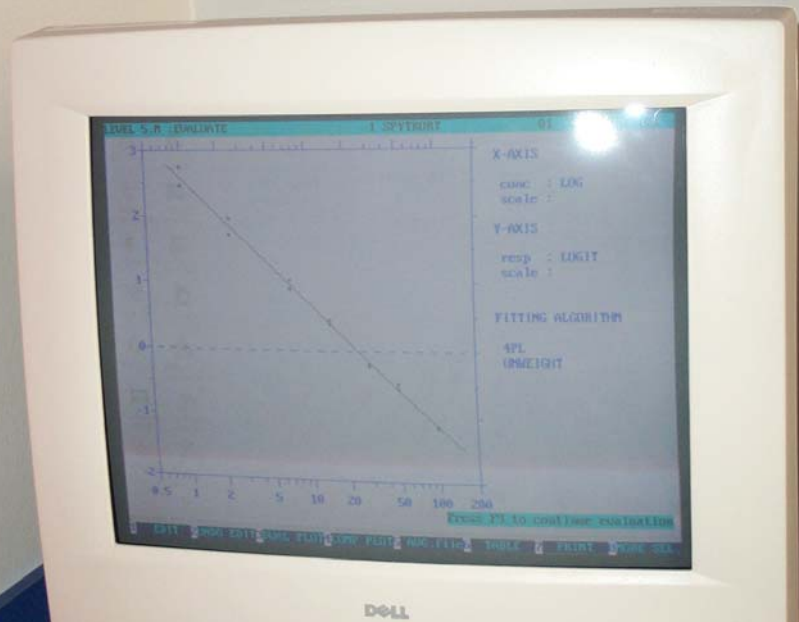
Analysis of cortisol



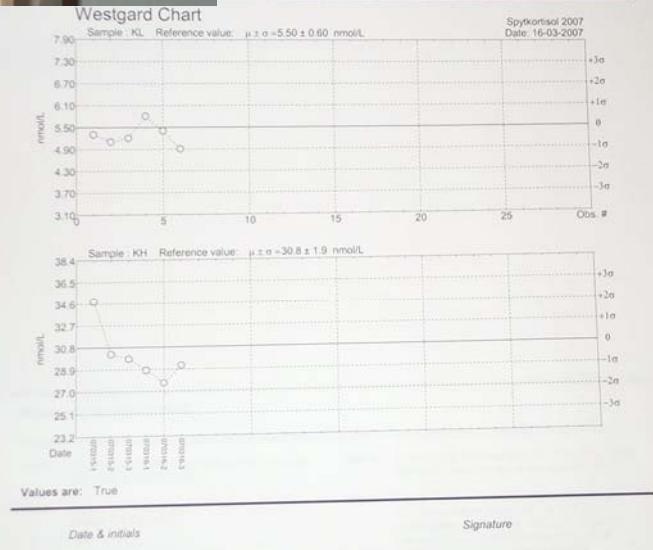
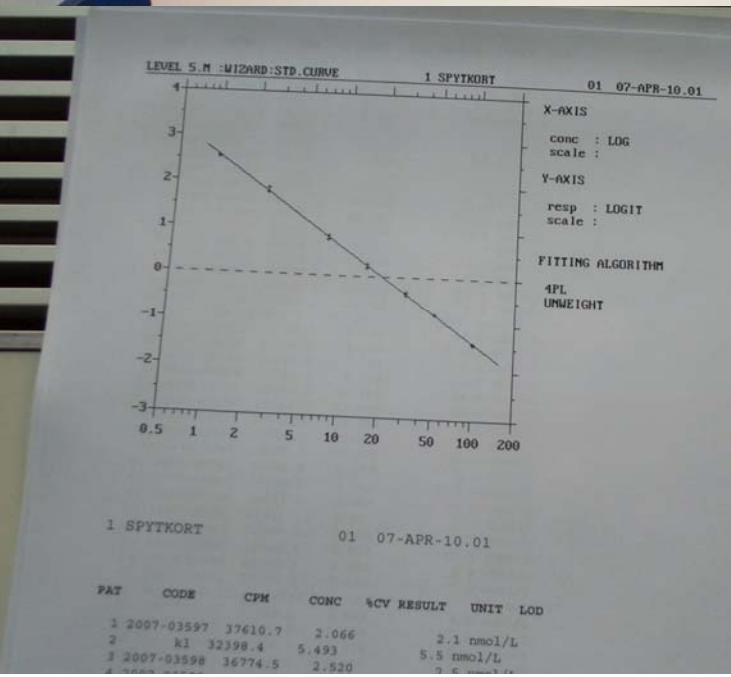


Analysis of cortisol

Analysis of cortisol



ID:	KH	(used)
Ref. value:	30.8	
Std. dev:	1.9	1.9





Approvals

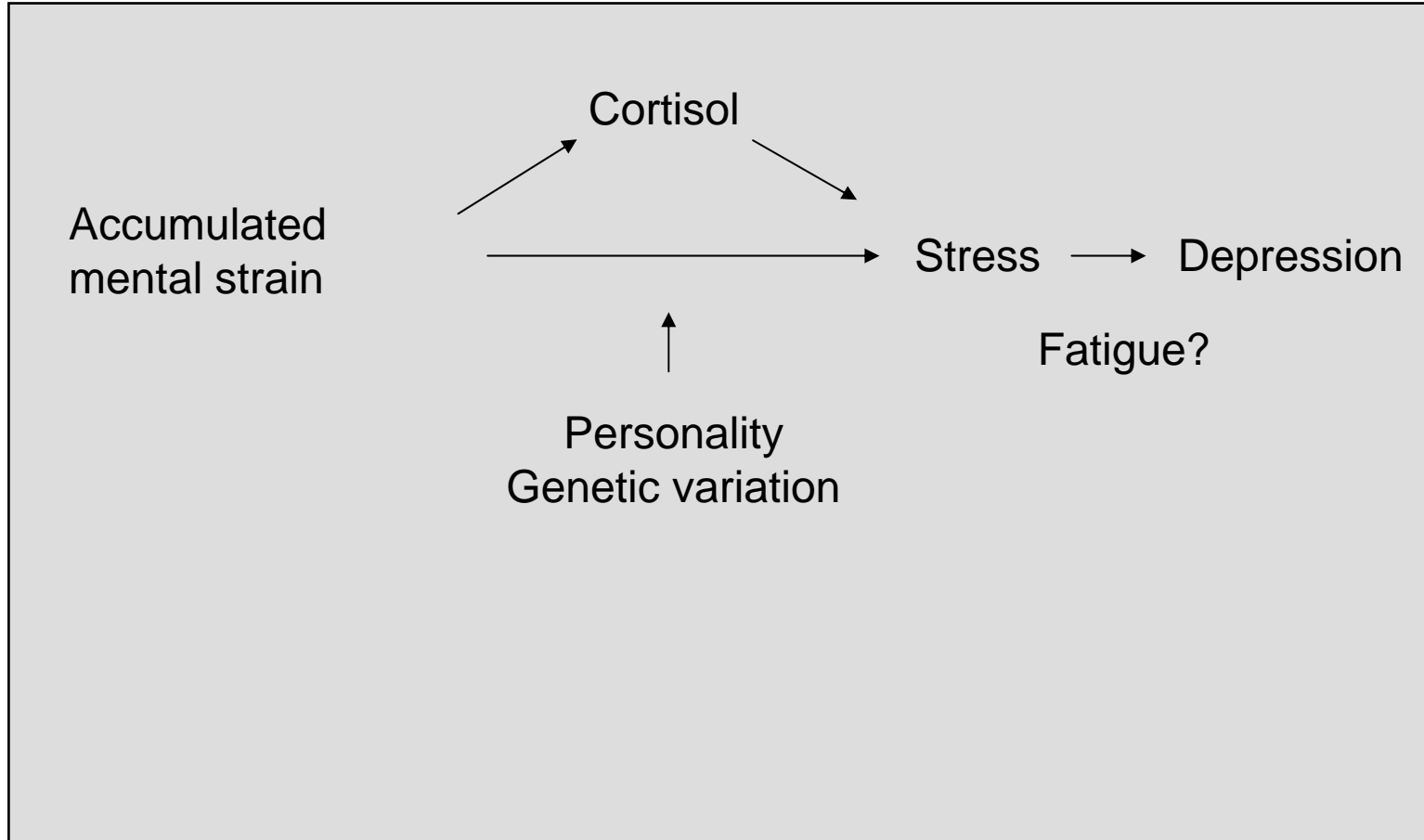
Project approved by:

Data register

The local ethics committee



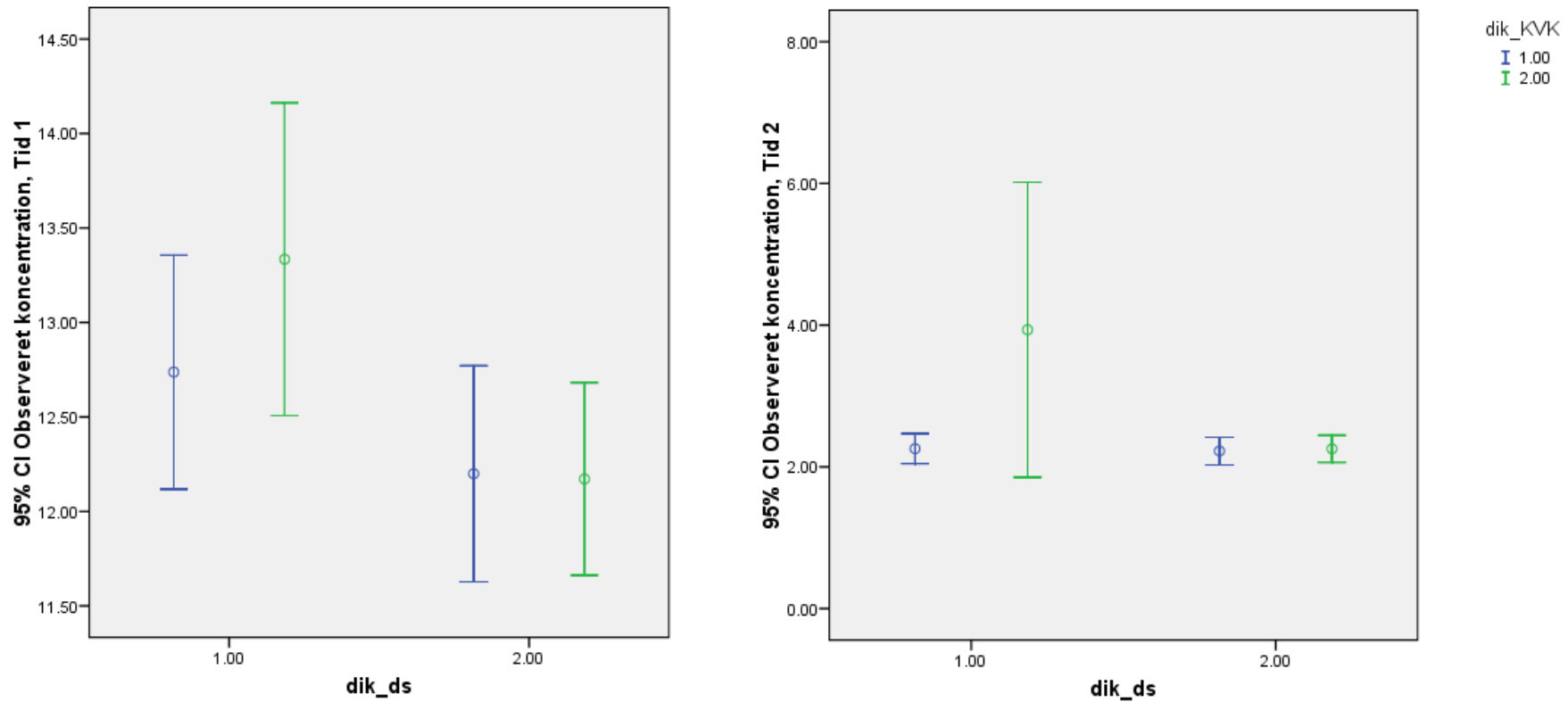
Hypotheses



Do perceived psychosocial work environment mediate the association between salivary cortisol and poor sleep?



Disturbed sleep - past 4 weeks



Questions?



Steptoe et al. Psychosom Med (2000)

- Are the research hypotheses or objectives clearly stated and answered?
- What are the overall results?
- Is biological variation considered?
- Ethical issues?
- What are the major strengths and weaknesses of the study?
- Is the conclusion valid?

Steptoe et al. Psychosom Med (2000)

- Are the research hypotheses or objectives clearly stated and answered?
 - Yes and No
 - Hypotheses on Job demands job control and cortisol are stated
 - Not a hypothesis on anger and job strain and cortisol
 - Yes, the hypotheses were answered
- Design
 - School teacher scoring high and low on job demands/job control were selected at time one – cortisol measurement over a full day and measuring job demand/job control

Steptoe et al. Psychosom Med (2000)

- What are the overall results?
 - Cortisol concentration were 21.7 % elevated in the morning for the high strain group compared to the low strain group.
 - Lack of confidence interval (CI) for the difference
 - No CI on the Figures
 - No registration for time of wake-up
 - Gender difference

Steptoe et al. Psychosom Med (2000)

- Is biological variation considered?
 - Gender difference – women higher concentration for women in the morning
 - Higher concentrations at lunch time
 - Age
 - Smoking
 - Diurnal variation
 - Sampling at specific hours of the day

Steptoe et al. Psychosom Med (2000)

- Ethical issues?
 - Nothing stated, however the study has been published before

Steptoe et al. Psychosom Med (2000)

- What are the major strengths and weaknesses of the study?
 - Many samples throughout the day
 - Confirm the measurement of job strain
 - Long follow up time a strength and limitation
 - Time of awakening is not collected
 - The study group have a higher SES compared to the average population

Steptoe et al. Psychosom Med (2000)

- Is the conclusion valid?
 - Their main conclusion is valid