Maintaining Engaged Well-Being at Work

What matters most?

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MIPH
Mannheim Institute of Public Health

Outline

The concept of work-ability and engaged well-being

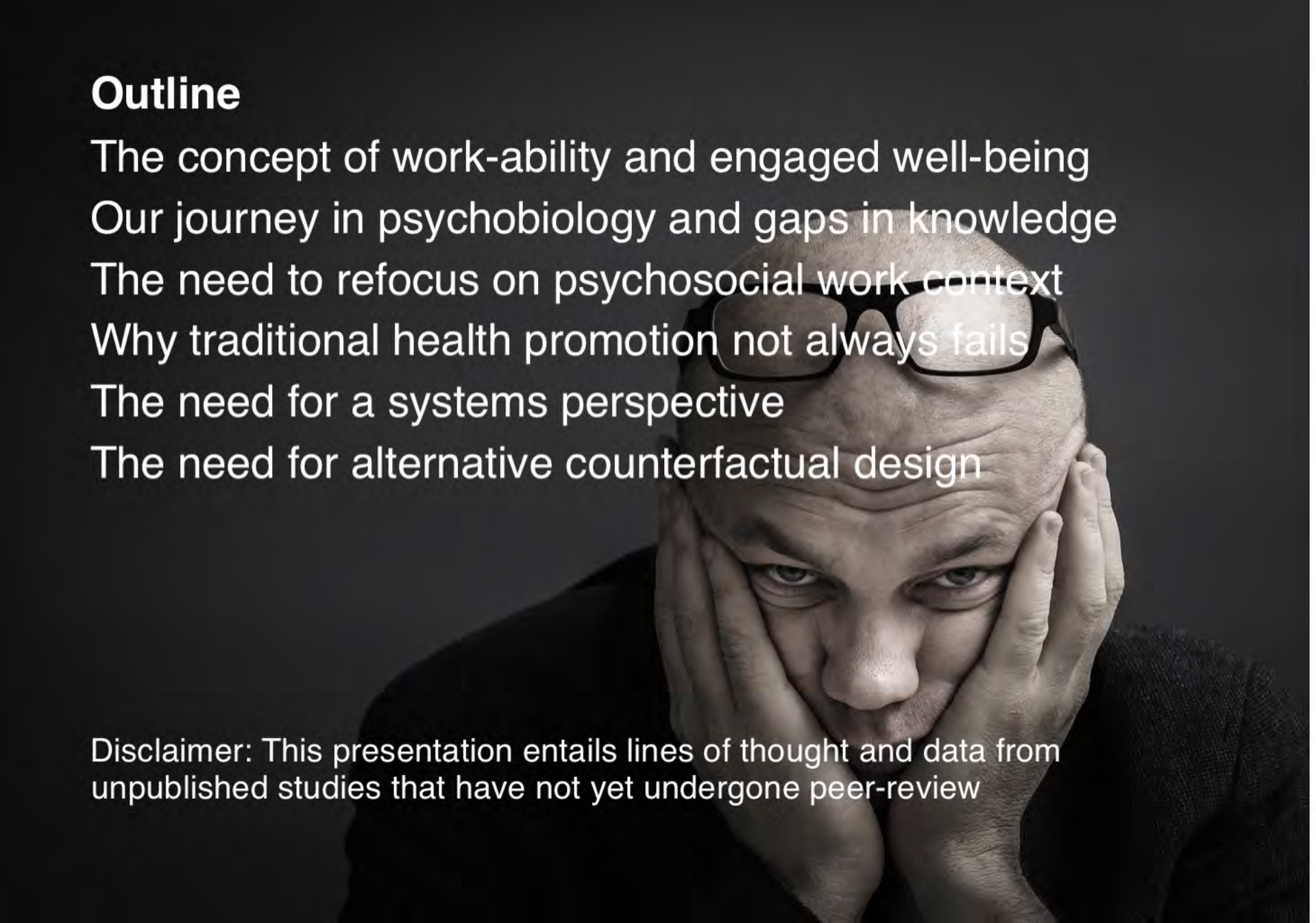
Our journey in psychobiology and gaps in knowledge

The need to refocus on psychosocial work context

Why traditional health promotion not always fails

The need for a systems perspective

The need for alternative counterfactual design



Disclaimer: This presentation entails lines of thought and data from unpublished studies that have not yet undergone peer-review

Disclosures

Ownership

HealthVision GmbH

High5Data GmbH

Business relationship

BMW Group was a key account for HealthVision GmbH

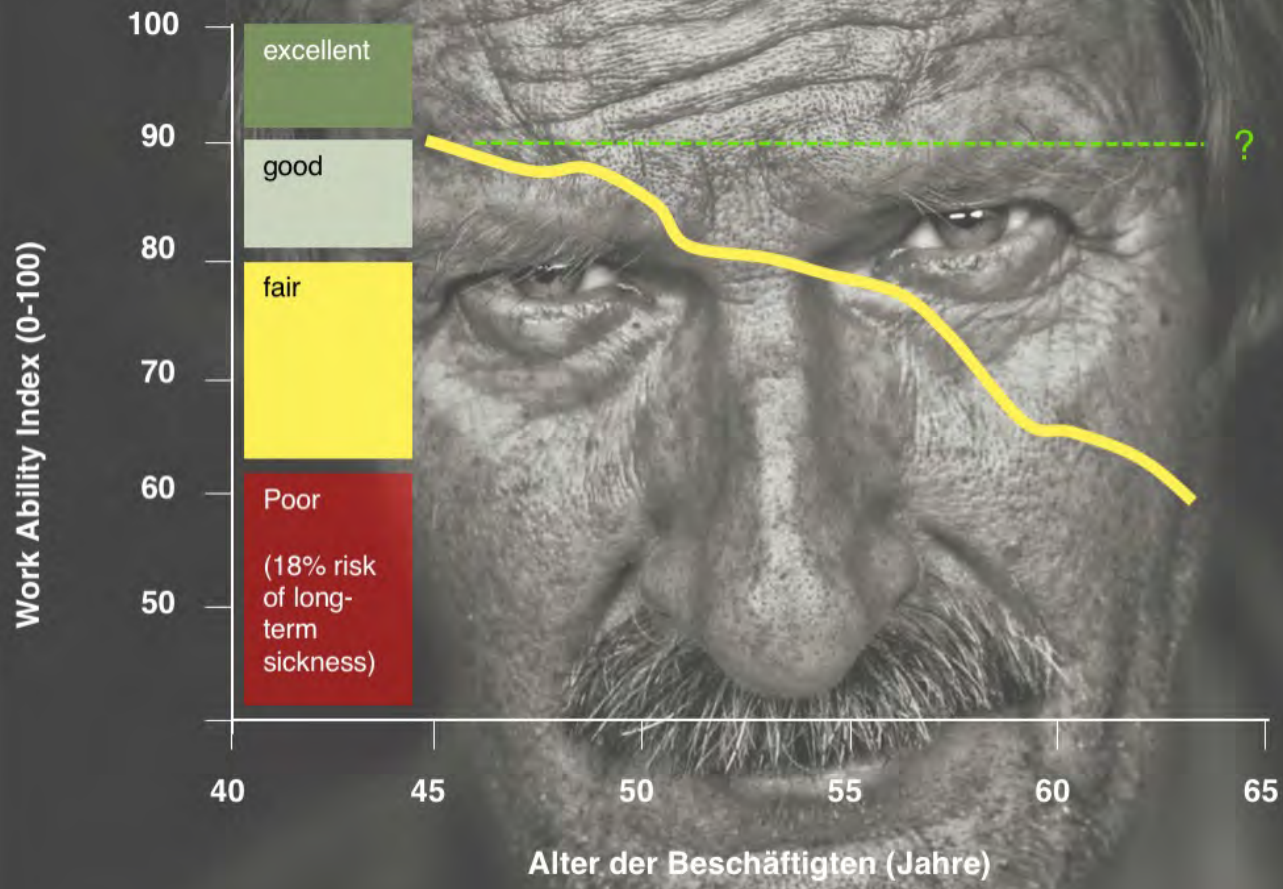
HealthVision GmbH provides data to Mannheim Institute of Public Health

Consultation fees

AbbVie, Airbus, Allianz, BMW Group, Federal Ministry of Labor, Roche Diagnostics, Airbus, Villeroy & Boch…

Our journey: 1997-2019

Work ability and aging



Between 45 and 60
Decline of about 1,7% per year

Causes:
Musculoskeletal-Disorders
Depression & Burnout
Sleep problems
Chronic stress
Lack of purpose
Diabetes

Do nothing

Adapted from Tuomi/Ilmarinen People and Work Research Reports. Vol. 65. Finnish Institute of Occupational Health, Helsinki; 2004

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Work-Ability
Self-reported measure

Conceptual Idea

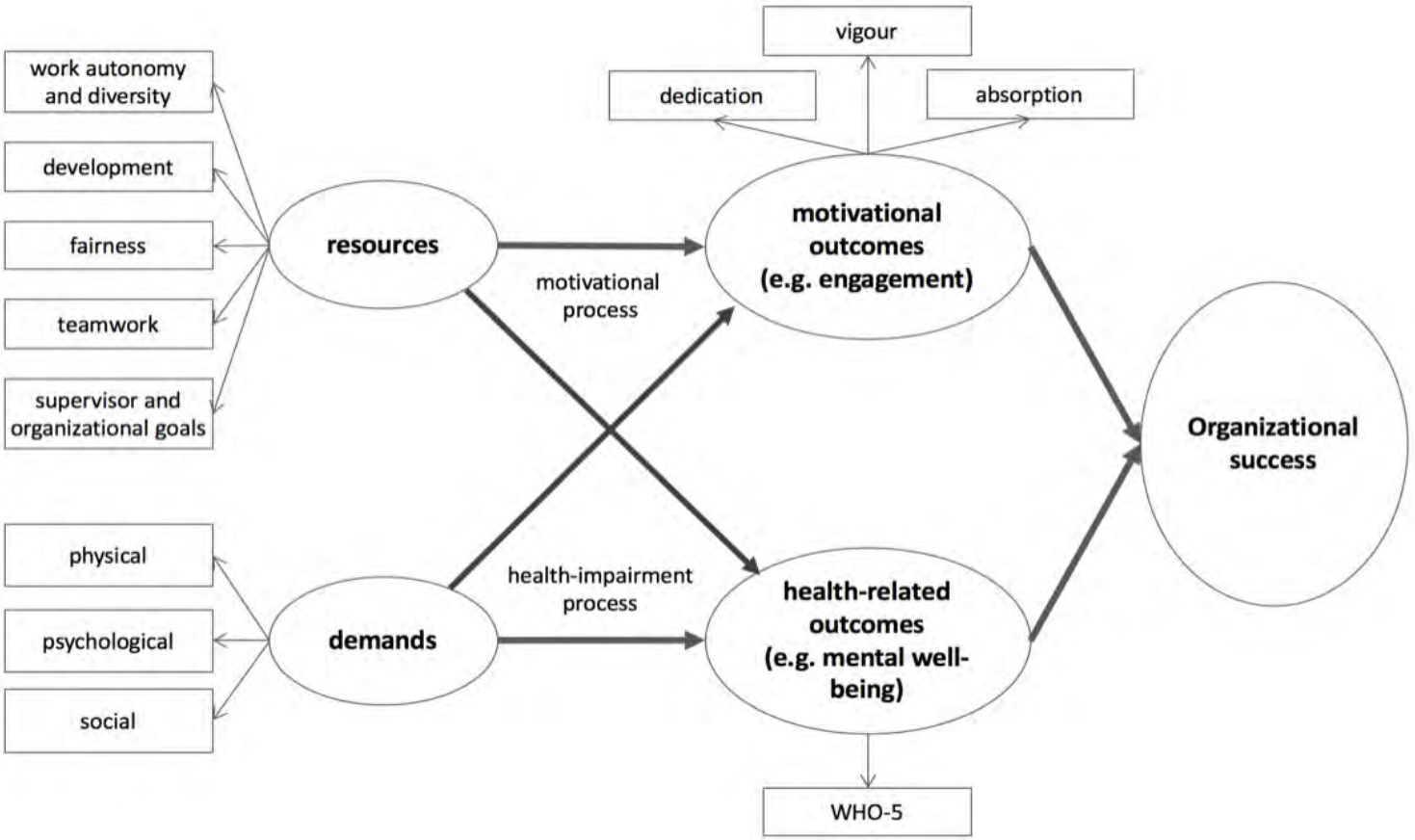
- Work-ability is a result of the interaction of four domains
- Health
- Competence
- Motivation
- Psychosocial and organizational work

Operationalization: 7 Domains – 22 items

- Current work-ability compared to best one ever
- Work-ability compared to demands
- Number of physician documented medical conditions
- Impact of health conditions on work-ability
- Sick-leave last 12 months
- Expected future work-ability considering current health
- Mental resources

Short form 5-8-items has sufficient psychometric characteristics

Engagement and Well-Being
Conceptual model



Engaged well-being
Self-reported measure

Conceptual Idea

- Individuals who report mental well-being and who thrive on their work might have better health outcomes and might be retained longer in any type of work (paid, voluntary)

Operationalization: Bakker Schaufeli Engagement + WHO-5

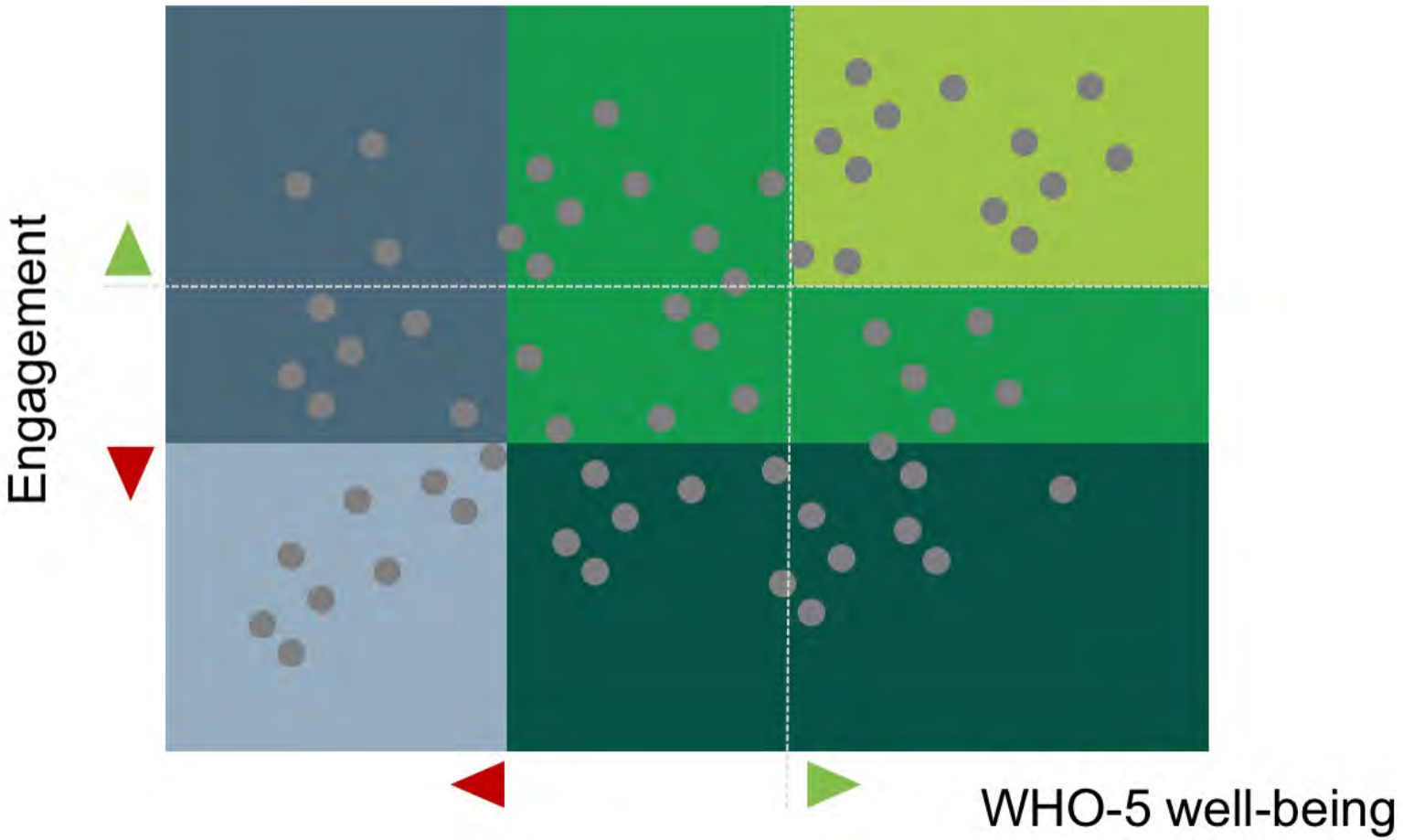
- At my work I am full of exuberant energy
- Working makes me feel fit and energetic
- I am enthusiastic about my work
- My work inspires me
- When I get up in the morning, I look forward to my work
- I feel happy when I work intensively
- I am proud of my work
- I am completely absorbed in my work
- I feel like being carried away by my work.

Impaired, well, excellent - cut-off (i.e. WHO-5 < 51), 0.5 SD above mean

Data

Three wave longitudinal representative study Germany

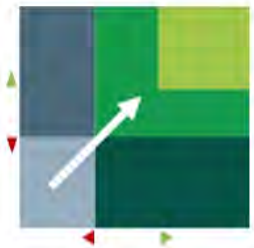
N ≥ 7000 per wave



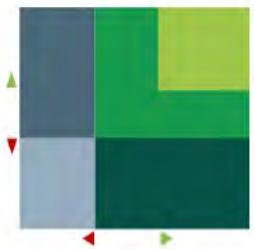
Data engaged well being

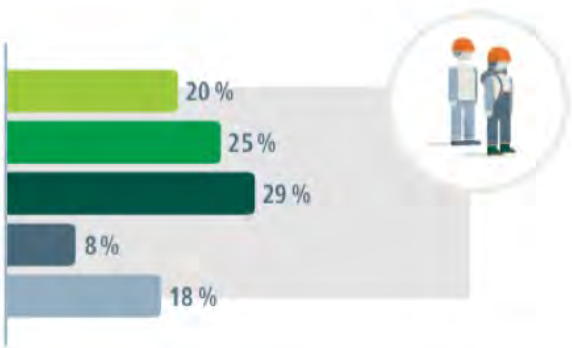
Three wave longitudinal representative study Germany

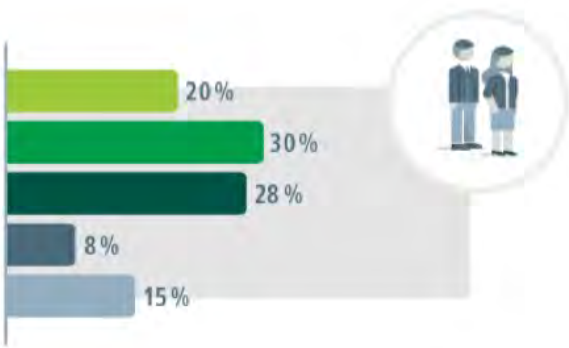
N ≥ 7000 per wave



Age, Type of Work

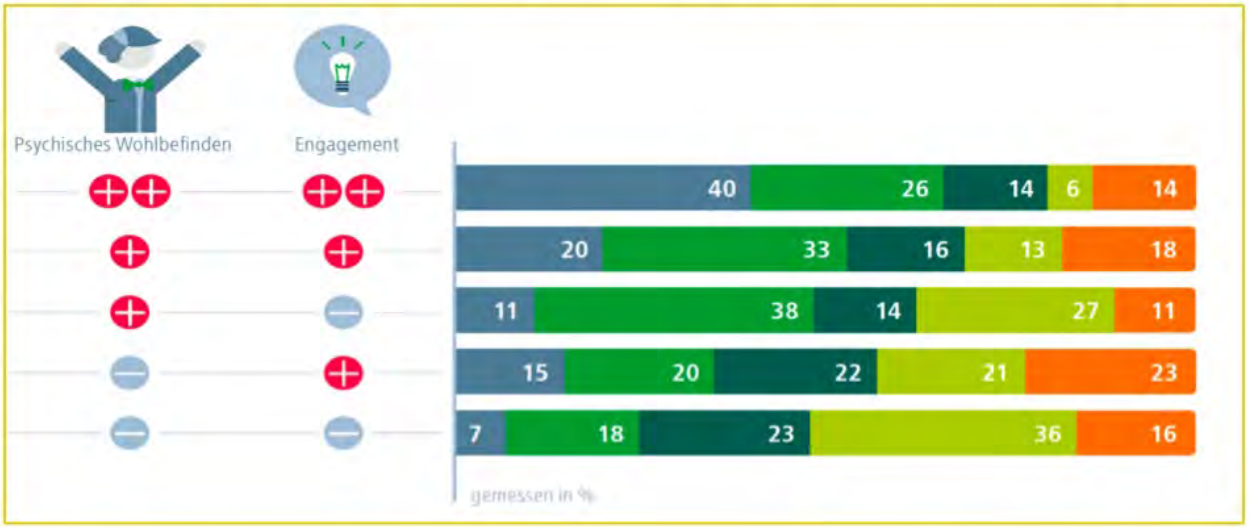






Personality and Differential Effect of Change

5 Typologies derived by Cluster Analysis from Big Five



Change-Score Well-Being
(per 1 point increase on a 1-5 scale)

Change-Score Engagement
(per 1 point increase on a 1-5 scale)

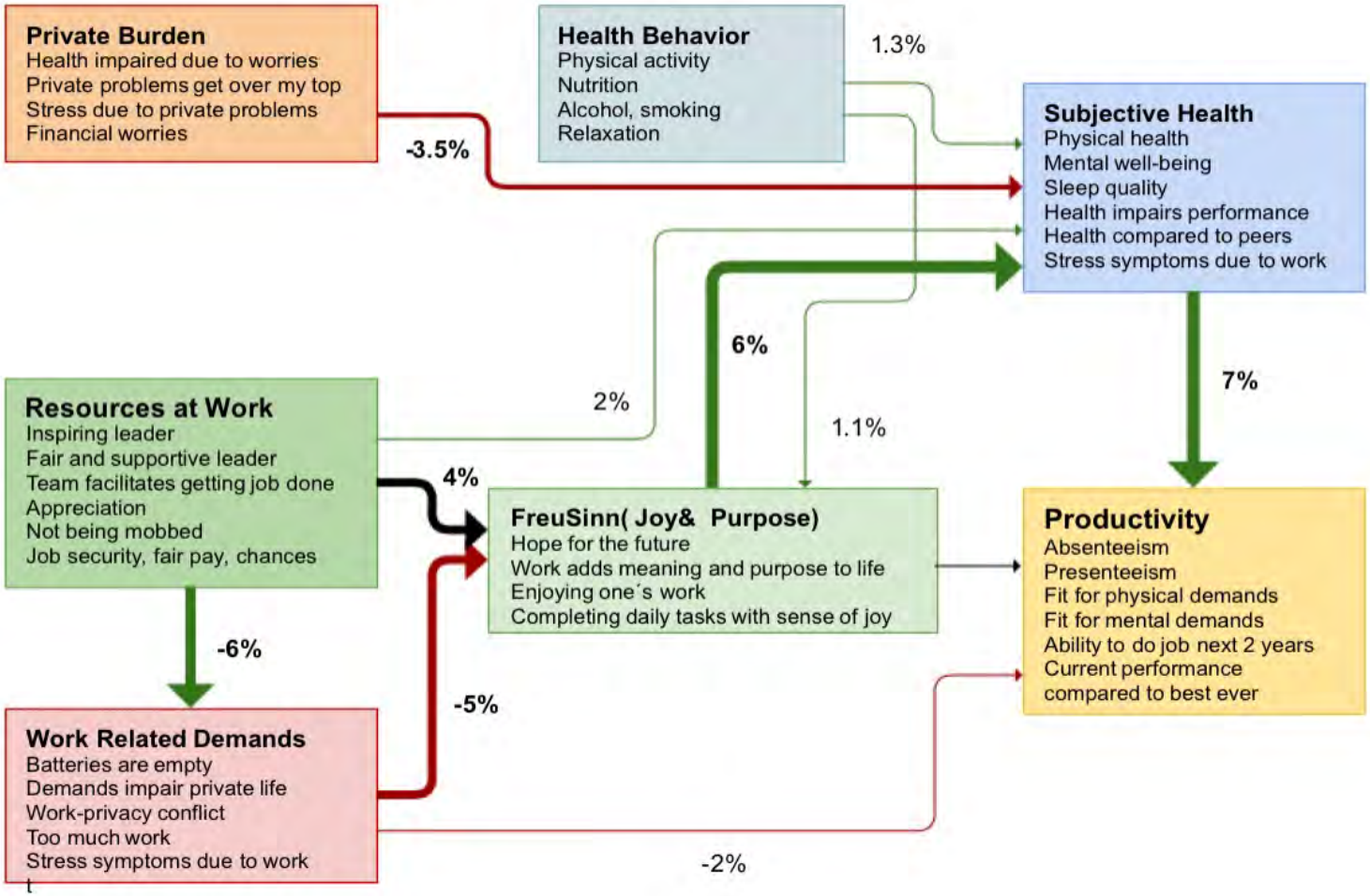
We kehr for you

BSR

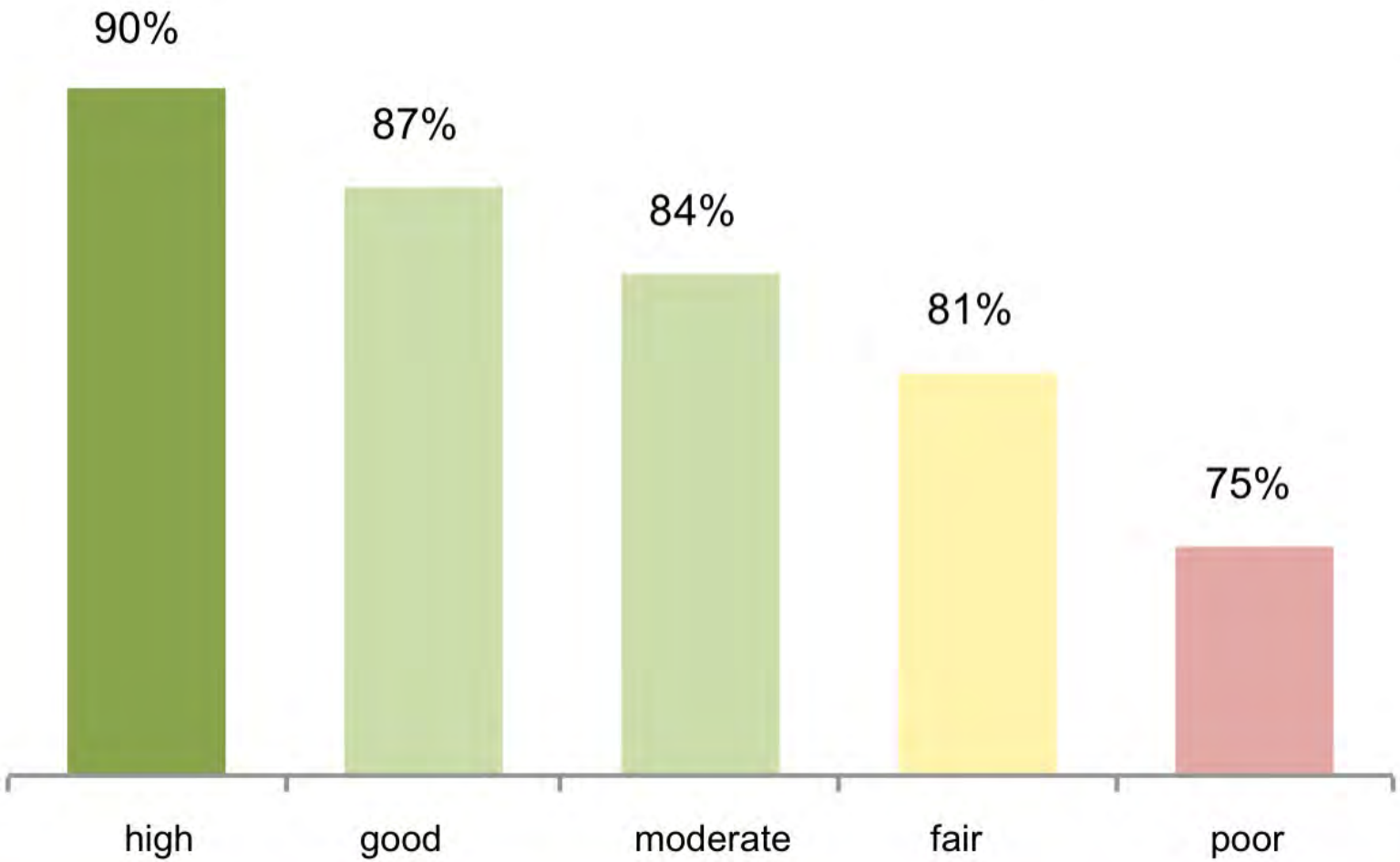
Wir bringen das in Ordnung

Joy & Purpose

Pathmodel
Path annotation: change per 10% change in proximal factor



Work ability and perceived purpose (N=2084)



Changing Eating Behavior in Canteens for Good: Preliminary Results From A Multimodal Complex Intervention

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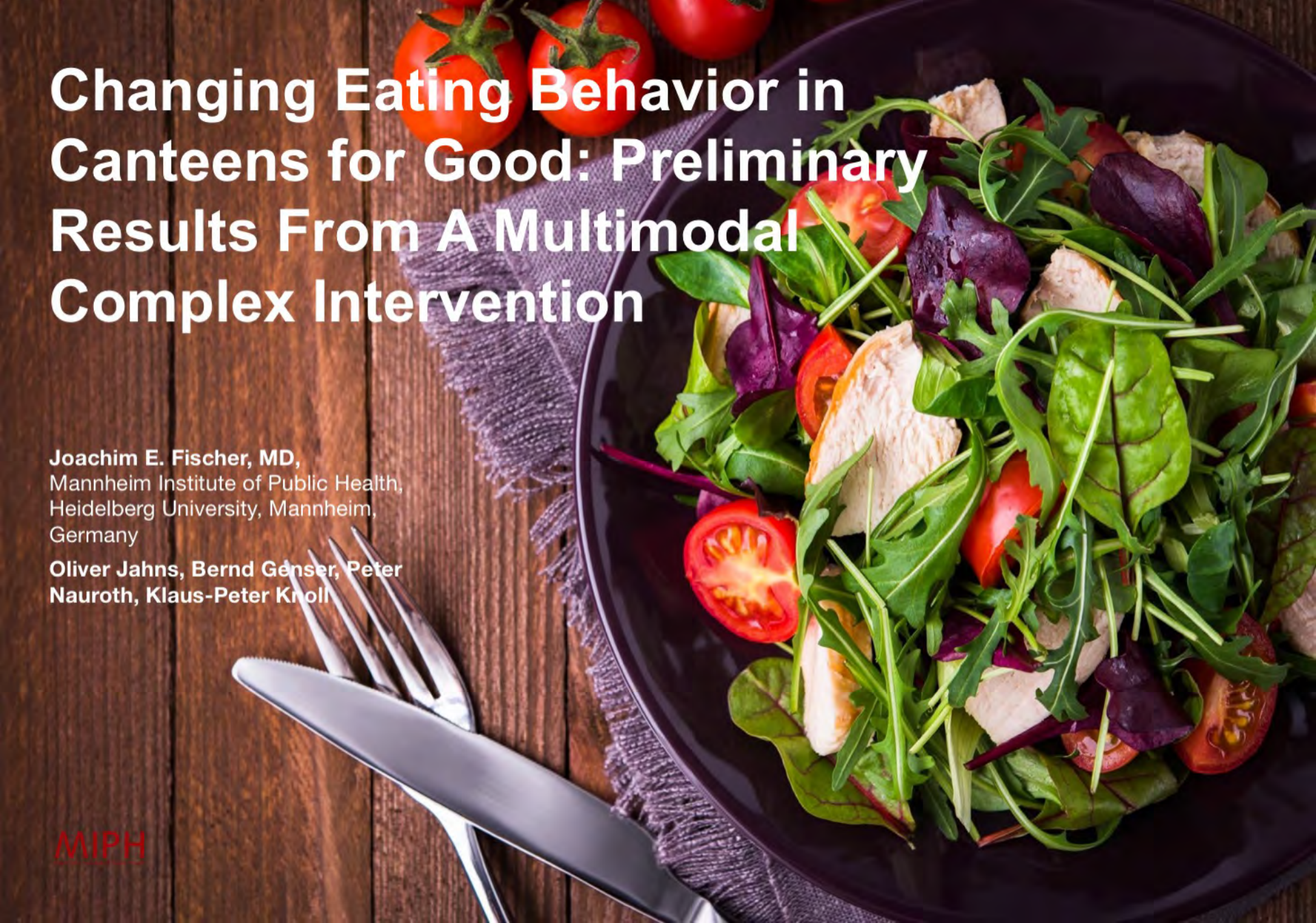
MIPH



Timeline of Intervention

Stepwise introduction – challenges for impact evaluation

2009

Strategy

Keep canteens, do not outsource. Identify scientific evidence about preventive meal composition. Train chefs in healthy meal production.

2011

Marketing & New Products

Comprehensive marketing strategy. Restructuring of canteens. Increase offers of healthy food. Provide education and information.

2014

Food Labelling & Restructuring

Food labelling. Calculated glycemic load for every meal offered. Restructure environment

2016

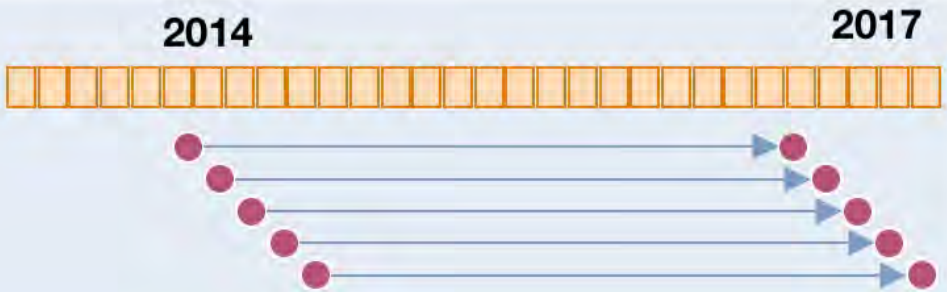
Incentives & KPI

Introduce key performance indicator for chefs, monitor monthly progress and goal achievement

Measurement model

Canteen sales index

Individual health examination
Repeat measures n = 1354

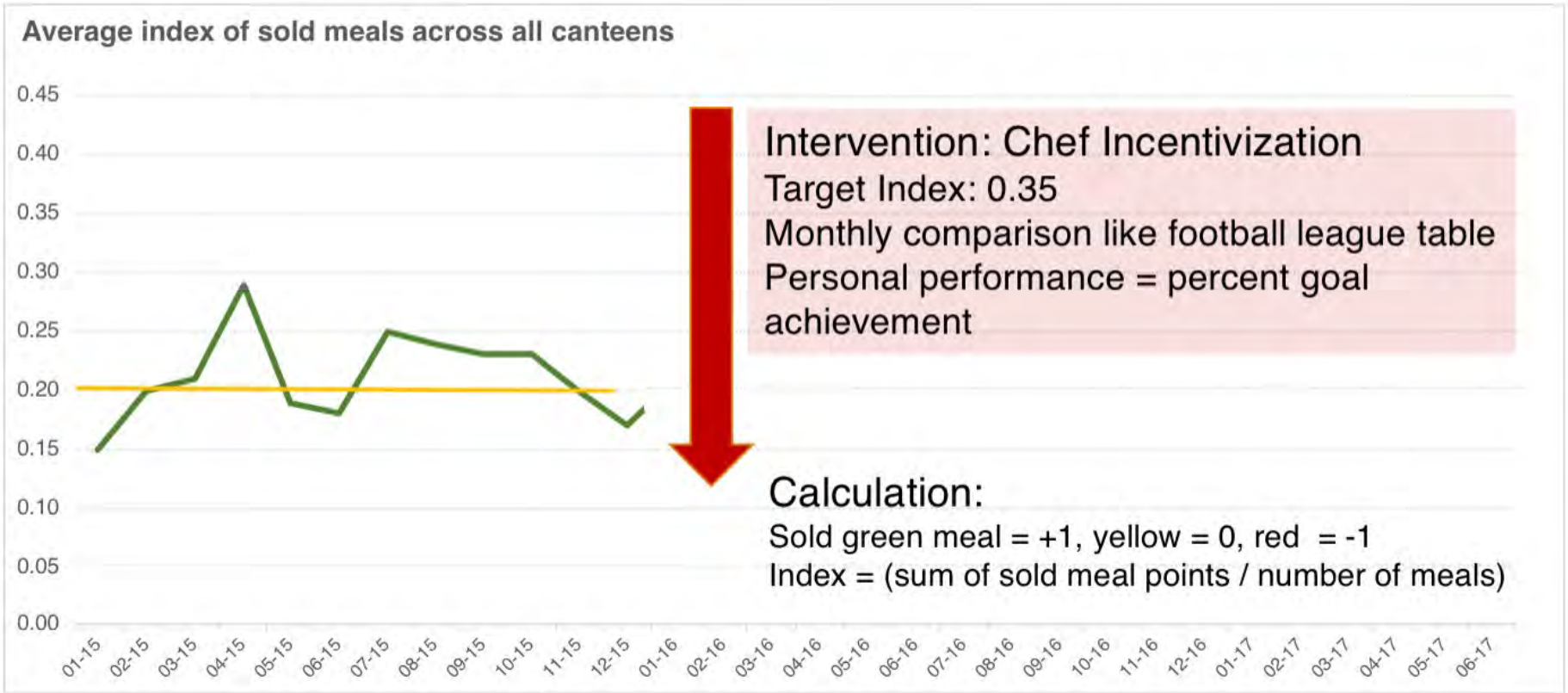


Examples of Marketing
Canteen meals

Change in Canteen Sales

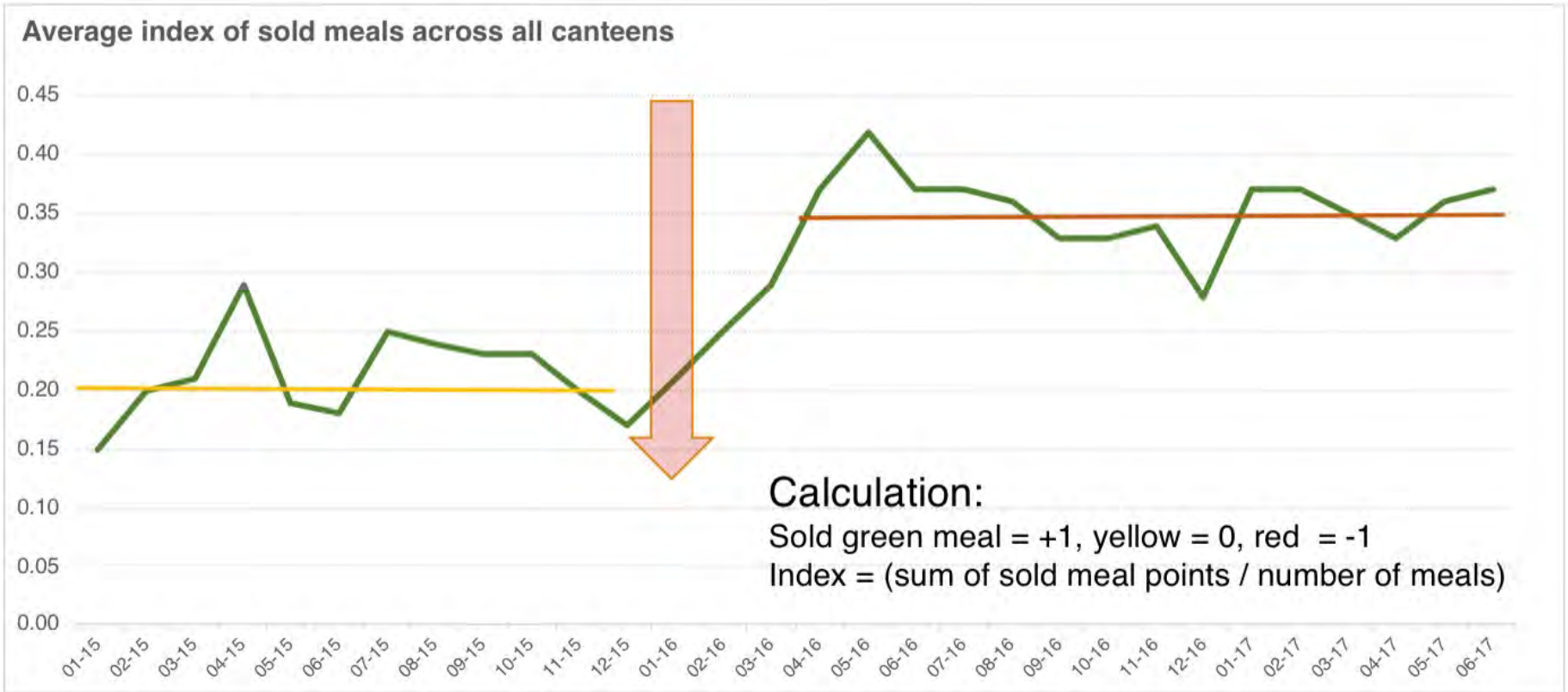
BMW sites in Germany, target population n = 100.000

Part I



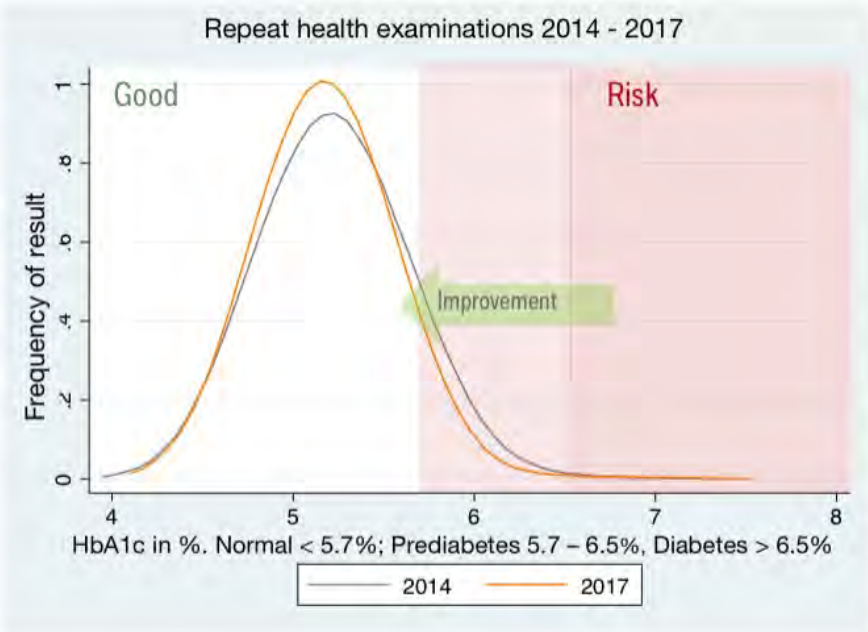
Change in Canteen Sales

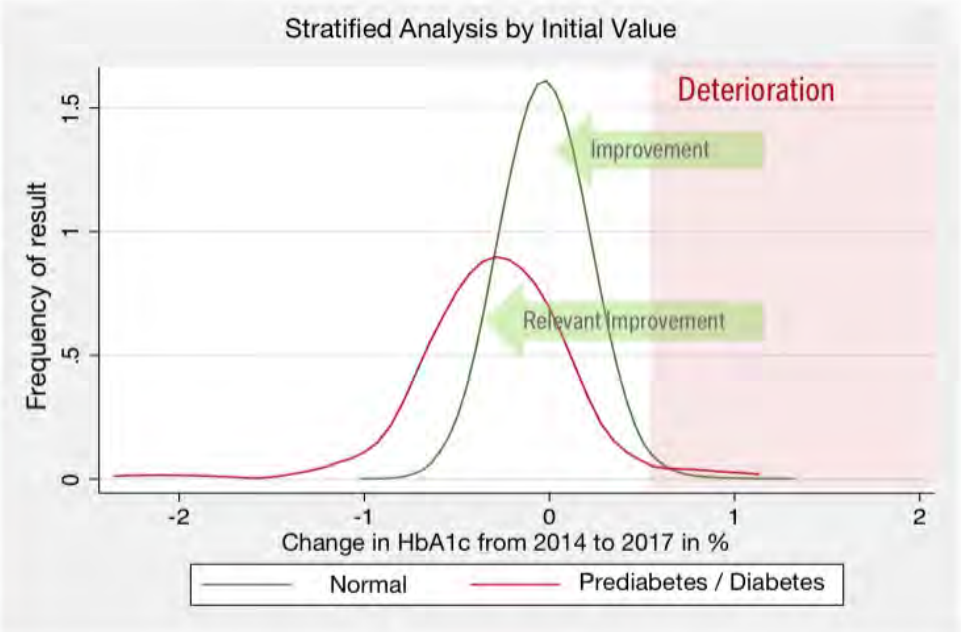
BMW sites in Germany, target population n = 100.000



Effect on Hba1c Levels

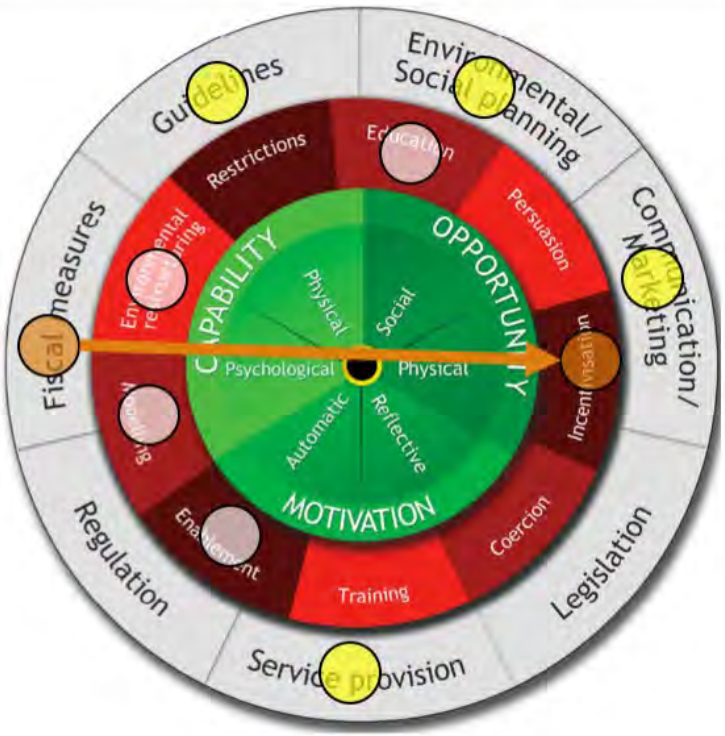
Participants of health examination in 2014 and 2017 (n = 1,354)





Change Behavior Research Context

Model Review, Strengths & Limitations

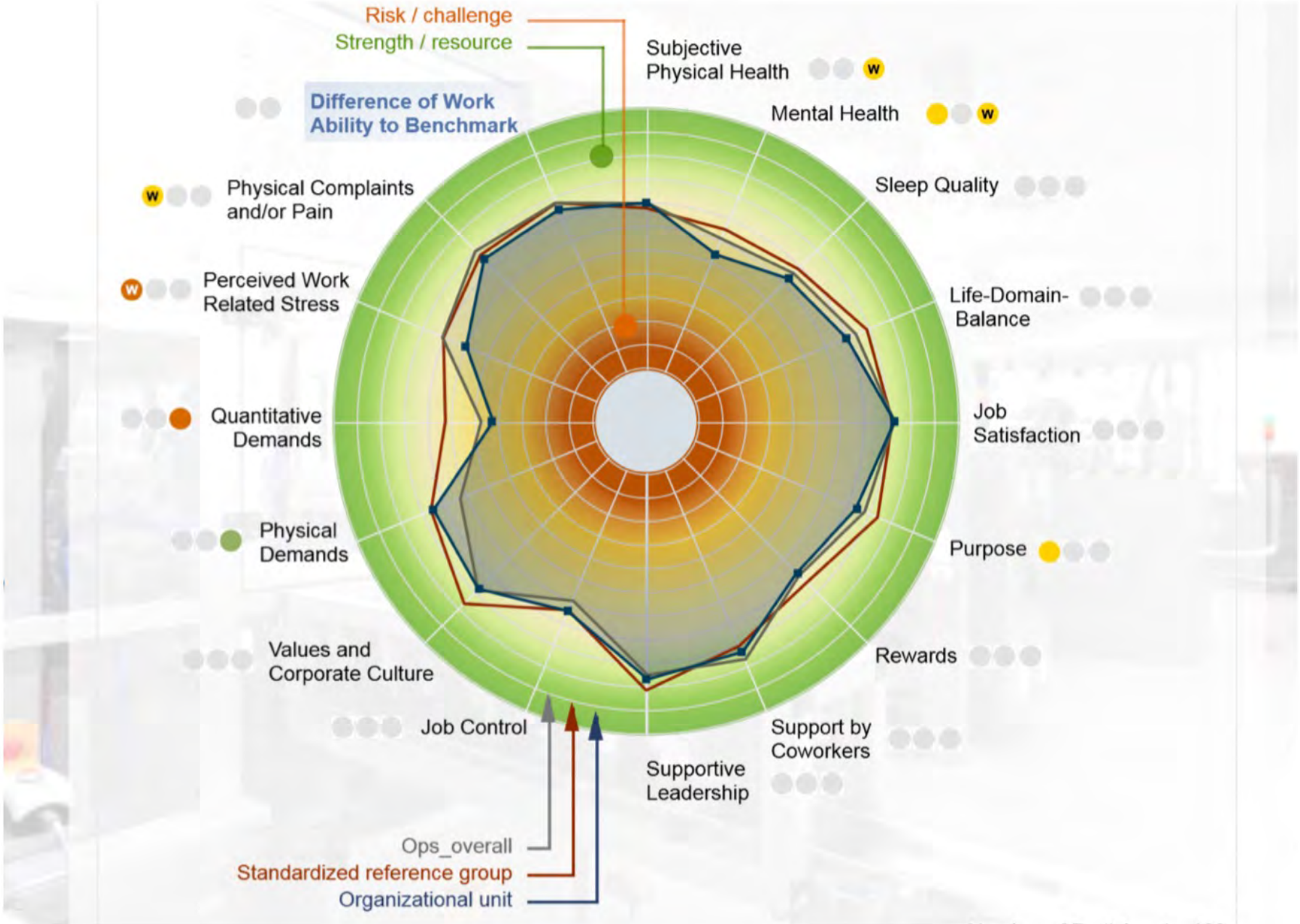


- **Long term ecologically valid complex intervention**
- **Simple outcome measures**
- **Multilevel intervention**
- **Systems thinking: key nodes, incentivize them**
- **Longitudinal multi-site follow up**

- **Difficulty to decompose effect**
- **Selection bias "healthy worker"**

Michie, S., Van Stralen, M. M. & West, R. 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation science, 6, 42.

The need for an integrated systems based approach

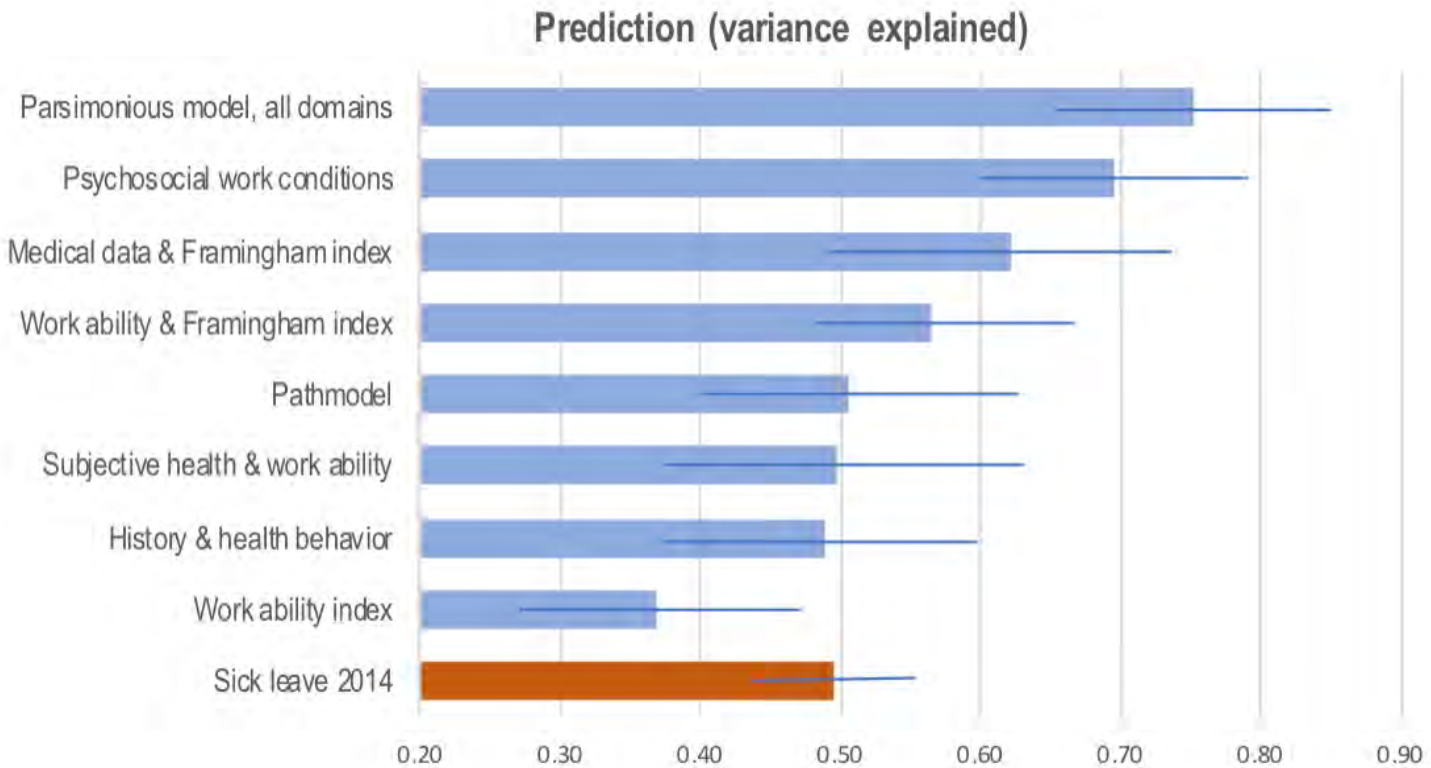

Risk / challenge
Strength / resource
Difference of Work Ability to Benchmark
Subjective Physical Health
Mental Health
Sleep Quality
Life-Domain-Balance
Job Satisfaction
Purpose
Rewards
Support by Coworkers
Supportive Leadership
Job Control
Values and Corporate Culture
Physical Demands
Quantitative Demands
Perceived Work Related Stress
Physical Complaints and/or Pain
Ops_overall
Standardized reference group
Organizational unit

Heterogeneity and Patterns – Between Department Variation

	Demografy			KPI		Perceived Health							Personal Resources						Work Related Resources									Demands - Challenges							Health Behavior		
Number of Participants / Rate	Calendaric Age		Gender	Health Related Loss Productivity	Work Ability Index	Perceived Health Index	Physical Health	Pain	Physical Complaints (past 4	Mental Health	Depression	Burnout	Sleep Quality	Personal Resources Index	Life-Domain-Balance	Overcommitment	Self Efficacy	Social Network	Worries	Work Related Resources Index	Job Satisfaction	Rewards	Support by Coworkers	Supportive Leadership	Job Control	Job Skill Development	Values and Corporate Culture	Purpose	Identification	Job Demands Index	Quantitative Demands	Physical Demands	Demands Modern Technology	Cognitive Demands	Emotional Demands	Perceived Stress Index	Work Related Stress Perception	Health Behavior Index	Physical Fitness	Smoking
1310 (50 %)	41.9	***	1.5	11.4	83.2	*** 10.8	10.1	11.5	10.8	*** 9.2	11.8	10.4	** 9.9	*** 11.4	10.5	10.3	11.6	12.8	12.4	*** 11.3	*** 11.7	10.4	*** 12.0	12.1	9.9	*** 11.9	11.6	*** 11.1	*** 11.4	*** 8.3	*** 8.2	*** 11.0	* 9.8	9.7	** 10.3	11.2	10.1	*** 10.7	11.4	*** 13.0
392 (66 %)	40.6	***	1.4	11.1	82.8	*** 10.6	10.0	11.6	10.9	*** 9.1	11.6	10.4	* 9.6	11.2	10.4	10.3	*** 11.4	12.8	12.5	10.7	11.3	*** 10.0	*** 11.7	*** 11.5	*** 9.0	*** 11.3	*** 10.9	*** 10.7	*** 11.1	*** 8.1	*** 7.8	*** 9.3	*** 10.2	** 9.5	10.8	11.2	10.0	*** 10.4	11.4	*** 11.2
107 (69 %)	41.4		1.3	9.8	83.9	*** 11.0	9.8	11.9	*** 11.6	9.8	12.2	10.8	10.3	* 11.5	*** 11.4	*** 11.2	11.7	12.5	*** 13.0	* 10.4	11.5	9.9	*** 12.1	*** 11.0	*** 8.2	10.9	*** 10.5	*** 10.9	*** 11.5	*** 8.4	*** 8.3	*** 8.6	* 10.6	9.8	*** 11.6	*** 11.8	10.7	*** 10.5	11.6	*** 10.0
28 (65 %)	44.7		1.3	11.6	81.0	10.6	** 8.3	10.8	10.9	9.7	11.8	10.1	9.5	11.4	10.9	11.3	11.4	12.4	13.0	* 10.0	*** 11.8	9.8	*** 12.0	*** 11.0	*** 6.8	10.1	*** 10.4	11.1	*** 11.7	** 8.6	8.7	*** 7.2	* 11.2	*** 11.0	*** 12.6	12.1	* 11.4	10.6	10.8	*** 10.2
39 (64 %)	** 35.8		1.2	** 5.5	86.9	*** 11.7	10.9	* 12.5	* 12.4	10.0	* 12.6	*** 11.6	10.7	*** 12.2	*** 13.1	*** 12.5	*** 12.5	12.8	*** 13.3	10.6	*** 11.8	10.2	*** 12.1	*** 11.0	9.2	11.0	*** 10.6	11.2	*** 12.2	*** 8.5	8.8	*** 8.0	*** 11.5	9.4	*** 12.1	*** 12.5	*** 11.2	* 10.3	12.0	*** 8.8
38 (78 %)	44.1	*	1.4	12.0	82.7	10.6	9.8	12.0	11.2	9.5	11.9	10.4	10.3	10.9	10.1	9.6	*** 10.9	12.4	12.8	10.7	11.2	9.8	*** 11.9	*** 11.2	* 8.8	11.2	*** 10.5	*** 10.5	10.7	*** 8.1	*** 7.4	*** 10.1	9.2	9.3	10.5	11.0	9.7	*** 10.2	11.4	10.9
48 (64 %)	39.9		1.1	14.8	80.5	10.3	10.6	11.9	10.3	*** 8.3	11.1	9.8	* 9.0	10.8	*** 9.2	9.4	11.6	12.8	11.8	10.4	*** 10.2	** 9.3	10.8	*** 10.6	9.6	*** 12.0	*** 9.5	*** 9.8	* 9.7	*** 7.1	*** 6.8	*** 9.3	*** 8.5	*** 8.5	** 9.5	10.5	9.2	*** 10.0	11.9	** 11.3
22 (52 %)	39.5	*	1.0	12.6	82.1	10.7	10.7	12.0	10.7	9.0	12.0	*** 10.1	9.3	10.9	10.2	11.2	11.6	12.5	12.3	11.0	10.5	9.7	11.5	11.3	9.8	*** 12.1	** 10.2	** 10.2	10.2	*** 7.1	*** 7.2	*** 8.1	9.1	8.7	10.5	11.4	10.5	** 9.7	12.2	** 10.4
26 (79 %)	40.3		1.2	16.6	79.0	9.9	10.5	12.0	10.0	*** 7.5	*** 10.4	9.4	* 8.8	* 10.5	*** 8.1	*** 7.7	11.7	12.9	11.5	* 9.7	*** 9.7	* 8.9	9.8	*** 10.0	9.3	*** 11.7	*** 9.0	*** 9.3	* 9.4	*** 6.8	*** 6.5	10.5	*** 7.8	*** 8.1	*** 8.6	*** 9.5	*** 8.3	* 10.3	11.5	12.1
10 (91 %)	42.2		1.4	14.1	81.7	10.2	10.1	*** 12.4	11.1	8.4	*** 10.3	9.3	9.3	10.3	*** 8.0	*** 6.9	12.1	12.2	11.6	* 9.8	*** 9.3	9.4	9.9	*** 9.9	8.8	10.5	*** 8.9	* 9.1	*** 8.2	* 8.1	8.0	*** 12.5	8.5	8.9	* 8.7	* 9.6	8.5	10.8	12.1	*** 14.8
100 (65 %)	** 38.3	***	1.4	* 8.2	85.0	*** 11.0	9.9	11.7	11.5	9.7	11.9	10.8	9.7	* 11.6	10.8	*** 11.0	11.5	*** 13.2	*** 12.9	11.0	11.6	10.4	*** 12.3	12.2	*** 8.7	*** 11.2	11.6	11.1	*** 12.2	*** 8.1	*** 8.4	*** 8.4	*** 11.1	9.9	*** 11.3	*** 11.8	*** 11.0	*** 10.1	11.7	*** 10.4
22 (50 %)	40.0	***	1.5	8.1	83.6	10.8	9.1	11.2	11.0	9.9	11.6	11.1	9.2	12.0	11.4	11.5	12.2	13.1	13.0	11.3	12.2	10.3	*** 13.0	12.9	*** 7.8	10.9	12.4	11.1	*** 12.4	*** 7.9	*** 7.9	*** 7.4	*** 11.5	10.0	*** 12.4	12.0	* 11.3	* 10.3	10.1	11.6
34 (87 %)	** 35.4	*	1.4	9.5	84.0	*** 11.1	10.2	11.9	11.5	9.6	11.9	*** 11.3	10.0	11.3	10.9	11.0	*** 10.2	13.1	12.7	11.1	*** 12.1	10.4	*** 12.3	11.5	8.3	*** 11.6	11.4	11.3	*** 12.3	*** 7.7	*** 8.2	*** 8.0	* 11.3	9.6	10.6	11.6	10.9	*** 10.0	*** 12.4	*** 8.9
26 (57 %)	38.4		1.2	* 5.2	*** 88.0	*** 11.3	10.4	12.5	12.6	10.0	12.5	10.6	10.3	11.7	10.6	11.4	12.2	13.1	* 13.3	11.3	11.5	10.7	*** 12.2	12.5	9.5	10.8	11.9	11.2	*** 12.1	** 8.4	9.4	*** 7.9	*** 11.6	9.7	*** 12.1	*** 12.3	*** 11.7	* 10.4	*** 12.8	*** 10.1
18 (72 %)	41.7	***	1.6	13.5	82.4	10.1	9.9	10.6	10.3	8.7	10.9	9.5	9.4	10.9	9.6	9.7	11.2	*** 13.7	12.1	10.8	10.7	9.7	11.1	11.4	9.6	11.1	10.8	10.4	11.4	** 8.3	8.3	11.2	9.7	10.1	* 9.7	10.9	9.1	*** 9.4	10.7	11.9
100 (65 %)	40.9	***	1.7	12.1	* 81.5	10.2	10.0	11.3	10.5	*** 8.4	* 11.3	** 9.7	* 9.3	10.9	** 9.9	9.7	*** 10.8	12.8	12.1	10.7	11.3	* 9.9	11.3	*** 11.7	9.4	*** 11.2	*** 10.8	*** 10.4	10.6	*** 8.1	*** 7.3	10.5	*** 10.5	9.7	*** 10.0	10.7	** 9.1	* 10.7	** 10.5	13.0
33 (54 %)	44.8	***	1.7	16.3	78.8	* 9.3	9.2	*** 10.0	9.4	*** 7.6	*** 9.9	*** 8.4	*** 8.6	*** 10.3	*** 7.8	*** 8.1	10.9	12.5	*** 11.1	10.9	*** 10.5	9.7	11.3	*** 11.1	10.0	*** 11.9	11.1	*** 10.0	* 9.8	*** 7.6	*** 6.7	11.1	* 8.5	8.9	9.9	*** 9.5	*** 7.8	10.5	10.4	12.8
67 (72 %)	38.9	***	1.7	10.5	82.7	* 10.6	10.4	11.9	10.9	** 8.9	11.9	10.2	9.6	11.3	10.7	10.6	*** 10.8	13.0	12.6	10.7	11.5	9.7	11.3	11.8	9.1	10.9	*** 10.6	*** 10.7	11.0	*** 8.4	*** 7.6	10.2	*** 11.3	10.1	10.0	11.2	9.9	10.8	** 10.6	13.1
27 (68 %)	** 46.3		1.3	16.1	79.1	10.0	9.4	* 9.6	9.3	* 8.6	11.1	9.9	9.3	11.1	* 9.3	*** 8.7	11.8	12.1	11.8	11.0	11.4	10.1	11.3	11.5	9.6	11.6	11.3	10.7	11.4	*** 7.2	*** 6.2	10.3	* 8.5	*** 8.4	10.1	10.3	* 8.7	*** 9.5	10.6	11.0
19 (70 %)	*** 49.3		1.3	14.1	80.4	10.2	9.4	* 9.2	9.7	8.9	11.2	10.1	9.2	11.3	9.8	9.3	11.6	11.7	11.9	* 11.7	12.0	10.8	12.1	12.3	10.5	*** 12.0	12.1	11.2	*** 12.6	*** 7.3	*** 6.5	** 9.3	8.8	*** 8.4	10.2	10.5	9.0	*** 9.3	10.3	* 10.6
24 (52 %)	41.3	***	1.5	9.2	82.4	* 10.9	9.2	11.2	11.3	10.0	11.8	11.1	9.3	12.0	11.5	*** 11.6	*** 12.3	13.0	13.1	11.3	12.1	10.4	*** 12.9	12.7	* 7.9	10.7	12.4	11.2	*** 12.5	*** 7.9	** 8.2	*** 7.3	* 11.5	9.8	*** 12.5	*** 12.2	*** 11.5	10.4	10.3	11.6
67 (68 %)	39.9	*	1.3	10.4	82.7	*** 11.0	* 9.5	11.7	11.2	9.7	11.9	10.9	9.7	11.4	11.0	*** 11.1	*** 10.9	12.8	*** 13.0	10.6	11.9	10.0	*** 12.2	*** 11.4	*** 7.7	10.9	*** 10.9	11.2	*** 12.1	*** 8.1	*** 8.4	*** 7.7	11.0	10.1	*** 11.6	*** 11.8	*** 11.2	*** 10.1	11.8	*** 9.3
50 (66 %)	** 37.0		1.1	* 6.9	86.0	*** 11.2	10.7	12.2	11.6	9.6	12.4	11.2	10.3	*** 11.8	*** 12.1	*** 12.0	12.1	12.8	12.9	10.7	11.4	10.0	*** 12.0	*** 11.1	9.2	*** 11.3	*** 10.4	*** 10.8	*** 11.7	*** 8.0	* 8.4	*** 7.9	10.9	9.1	*** 11.5	*** 12.1	10.6	*** 10.3	*** 12.2	*** 9.4

"Multilevel" model predicting sick-leave 12 months later

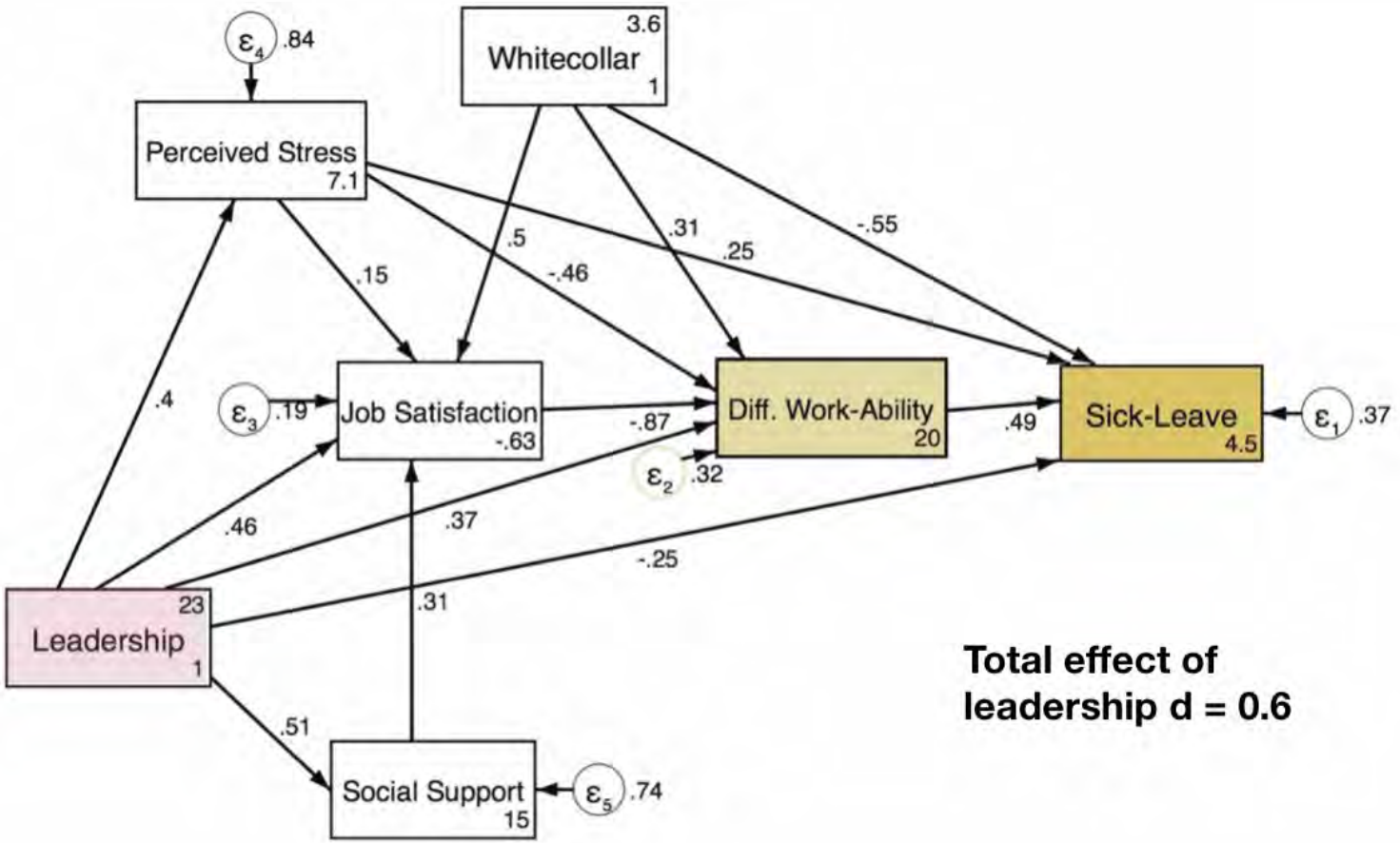
n = 3857 participants, 2014



Parsimonious model: Framingham relative risk index, smoking status, purpose, commitment, supportive leadership, predictability of work, skill development potential, work-privacy conflict

Predicting 2015 Sick Leave from 2014 Questionnaire

Path Model on Group Averages (n = 44 work groups)



Total effect of leadership d = 0.6

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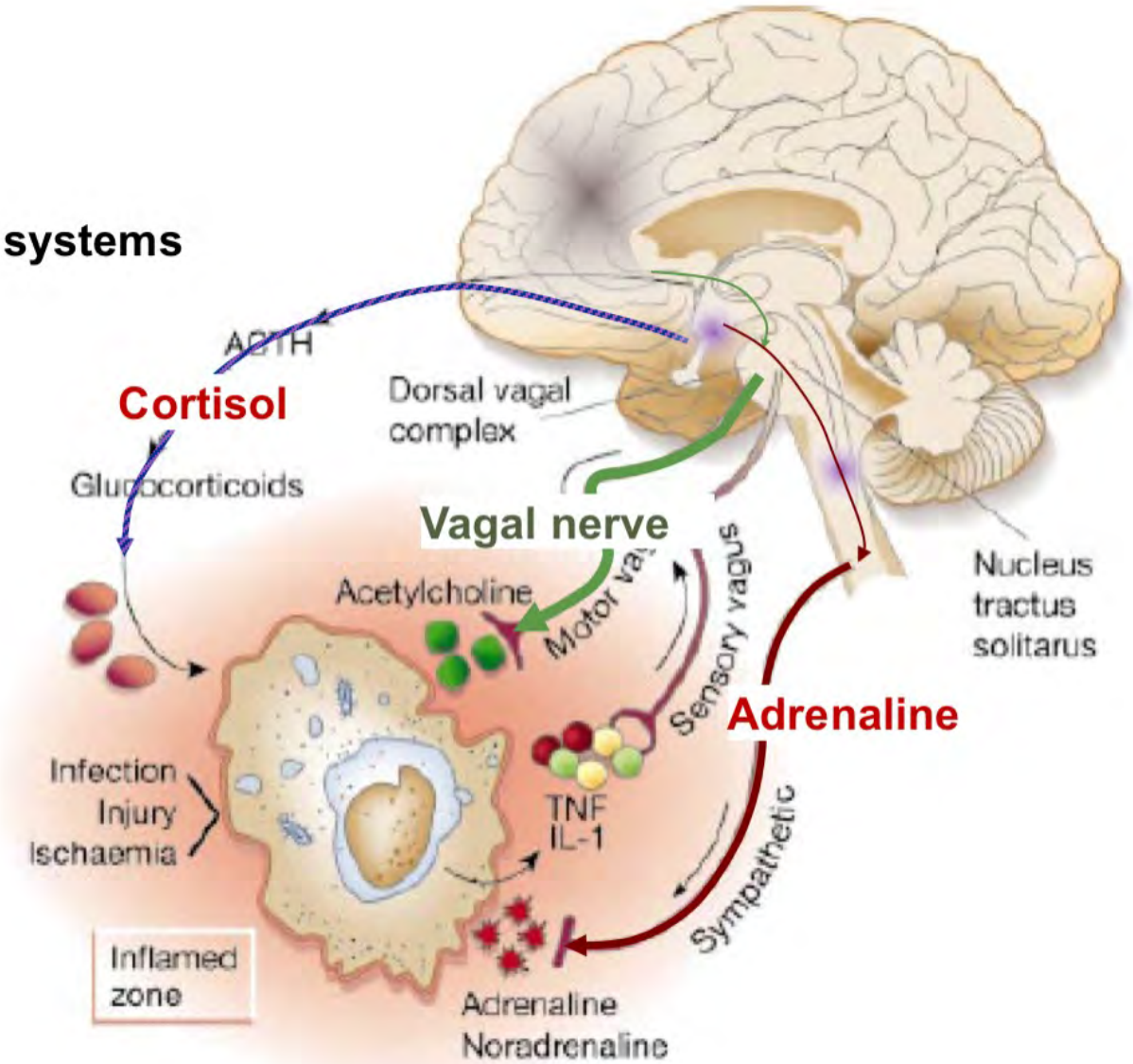
Wiring of stress-responsive systems

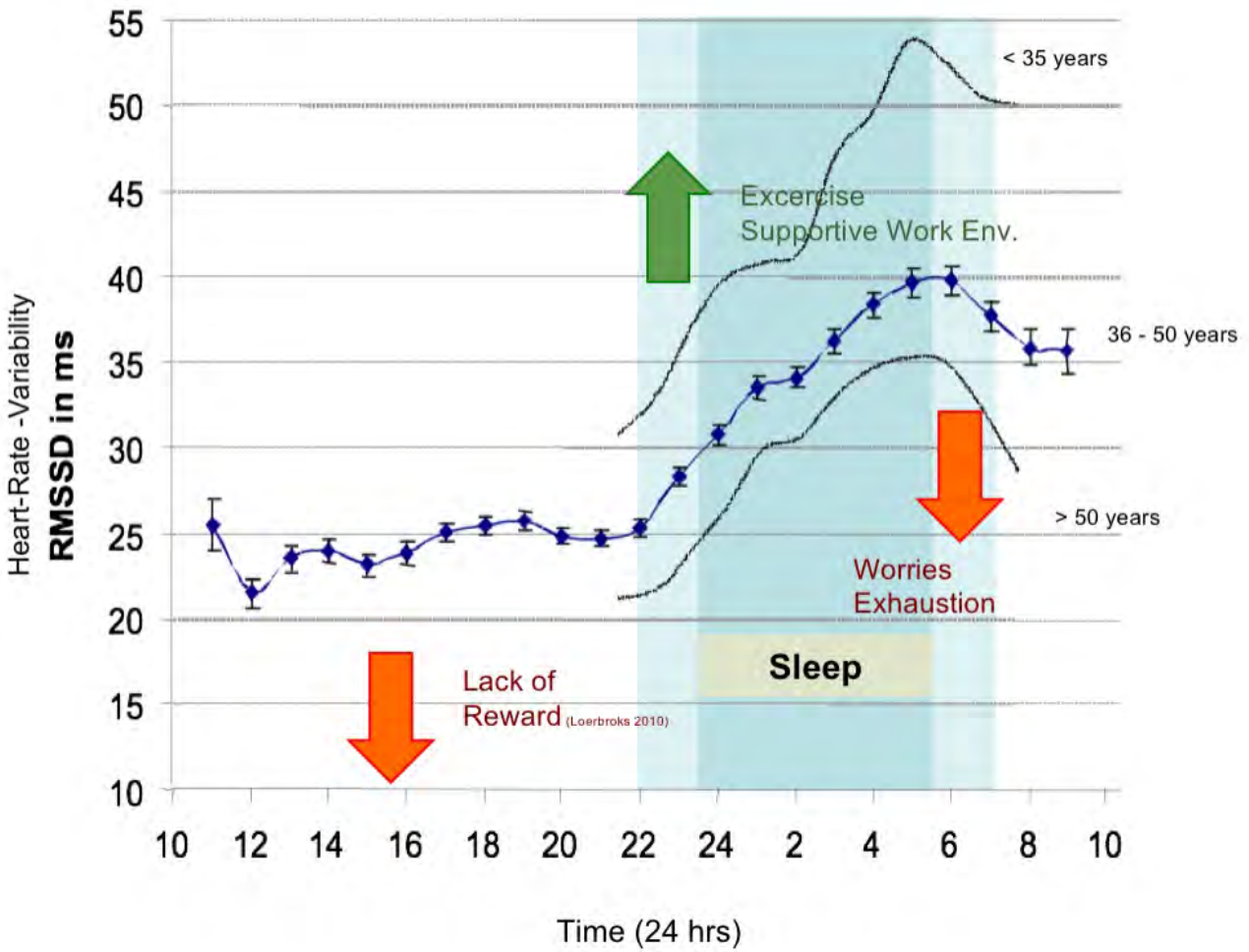
Vagal nerve = stress brake

Sympathetic = accelerator

Hormones = turbo-charge

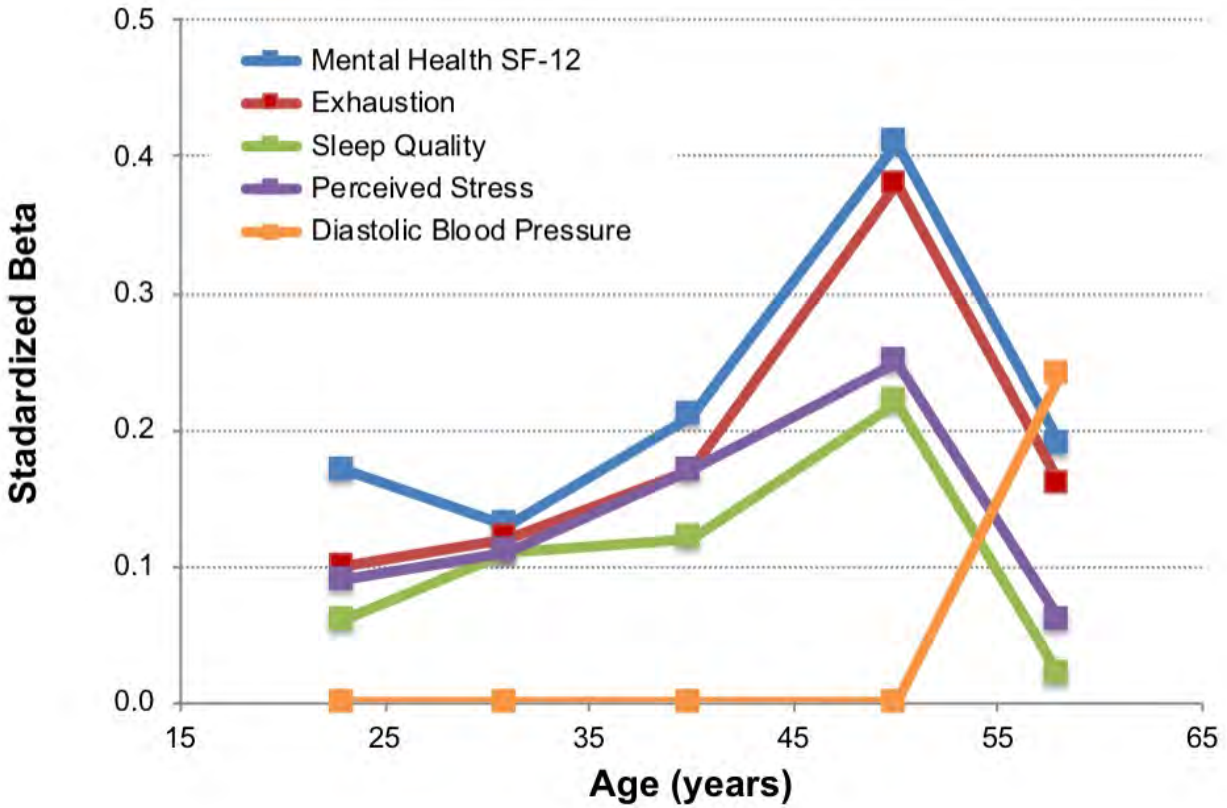


Factors affecting heart rate variability as index of parasympathetic tone



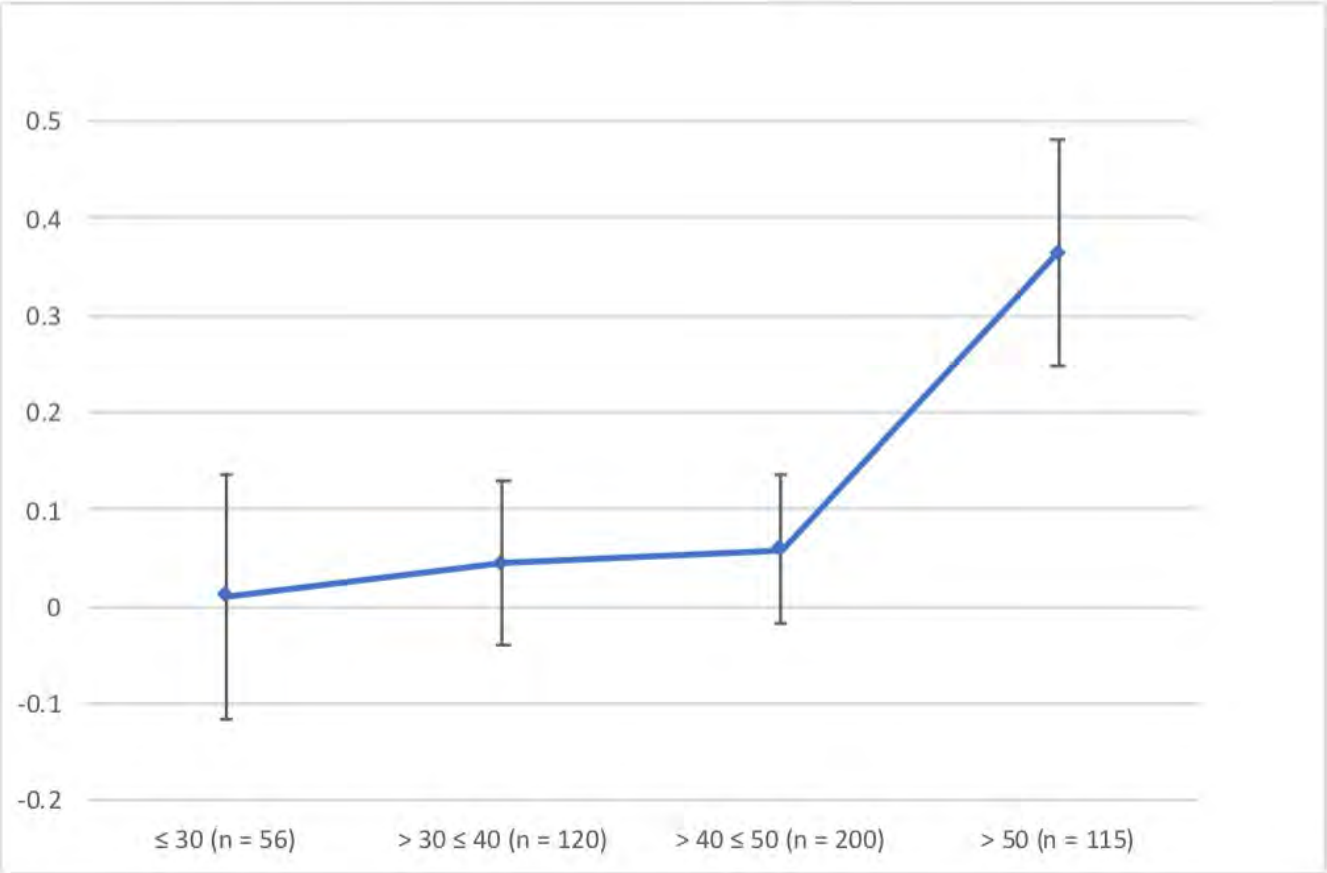
Purpose revisited

Purposeful work and health outcomes (n = 1891)



Effort-Reward-Imbalance and Carotid Intima Thickness

Cross-sectional data, controlling for worries and chronic stress perception, expressed as effect sizes, stratified for age.



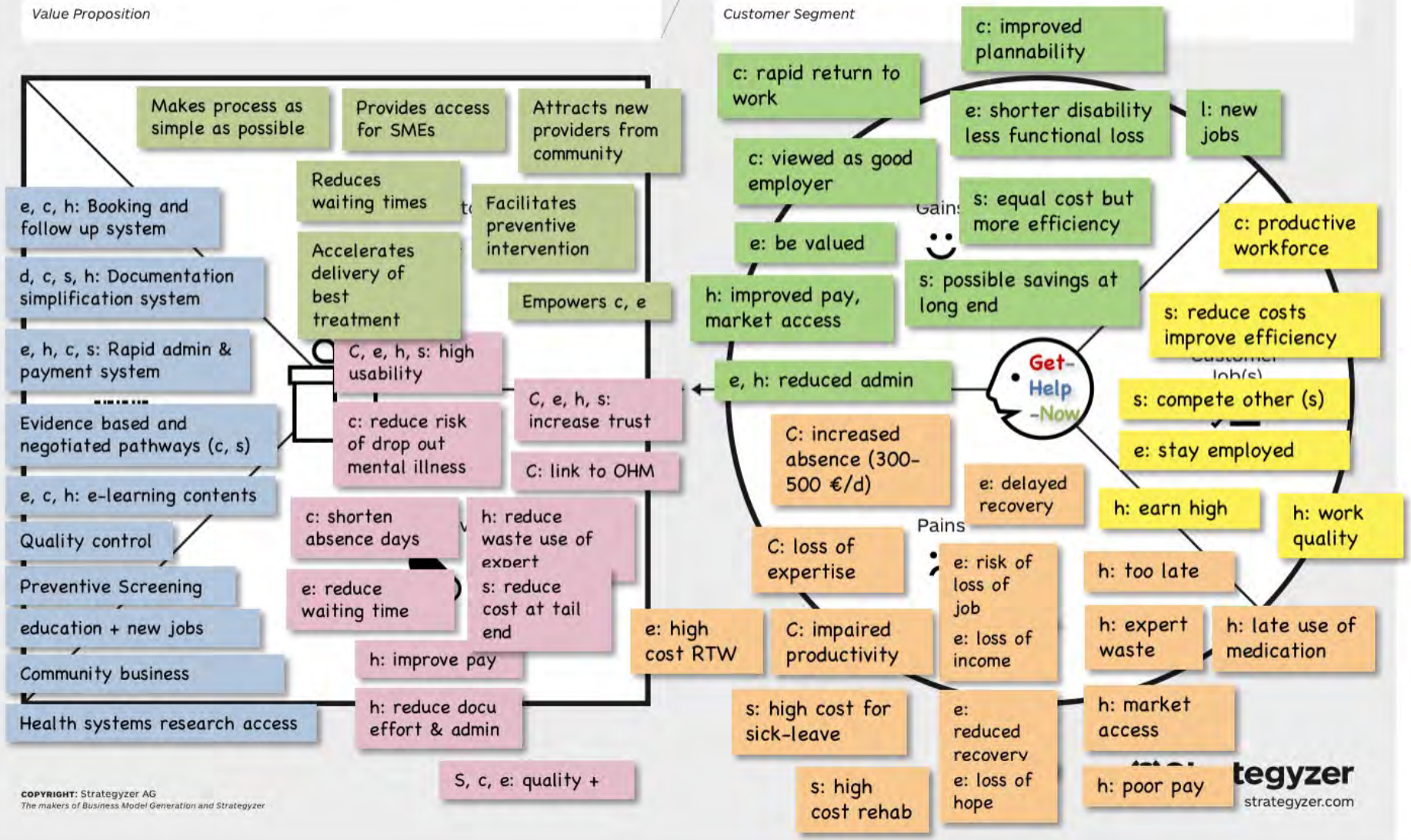
The Value Proposition Canvas

Early Intervention for MSK and Depression

Legend Customers: C: company e: employee h: healthcare provider s: healthcare payer / pension fund / social security l: community

Value Proposition

Customer Segment



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Take Home Messages

Improvement of psychosocial work conditions are more relevant than health behavior change promotion.

Change in organizations always entails complex, multilevel interventions

Systems thinking and multilevel designs: applying the right intervention to the right level and systems component

A huge challenge is to develop and test interventions from understanding of long-term effect of small changes in the psycho-biological regulatory systems.

New methods are needed for a posteriori impact and causal evaluation

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