

A nighttime cityscape featuring a prominent bridge with blue lighting over a body of water. Light trails from traffic on a nearby road are visible. The background shows city buildings and streetlights.

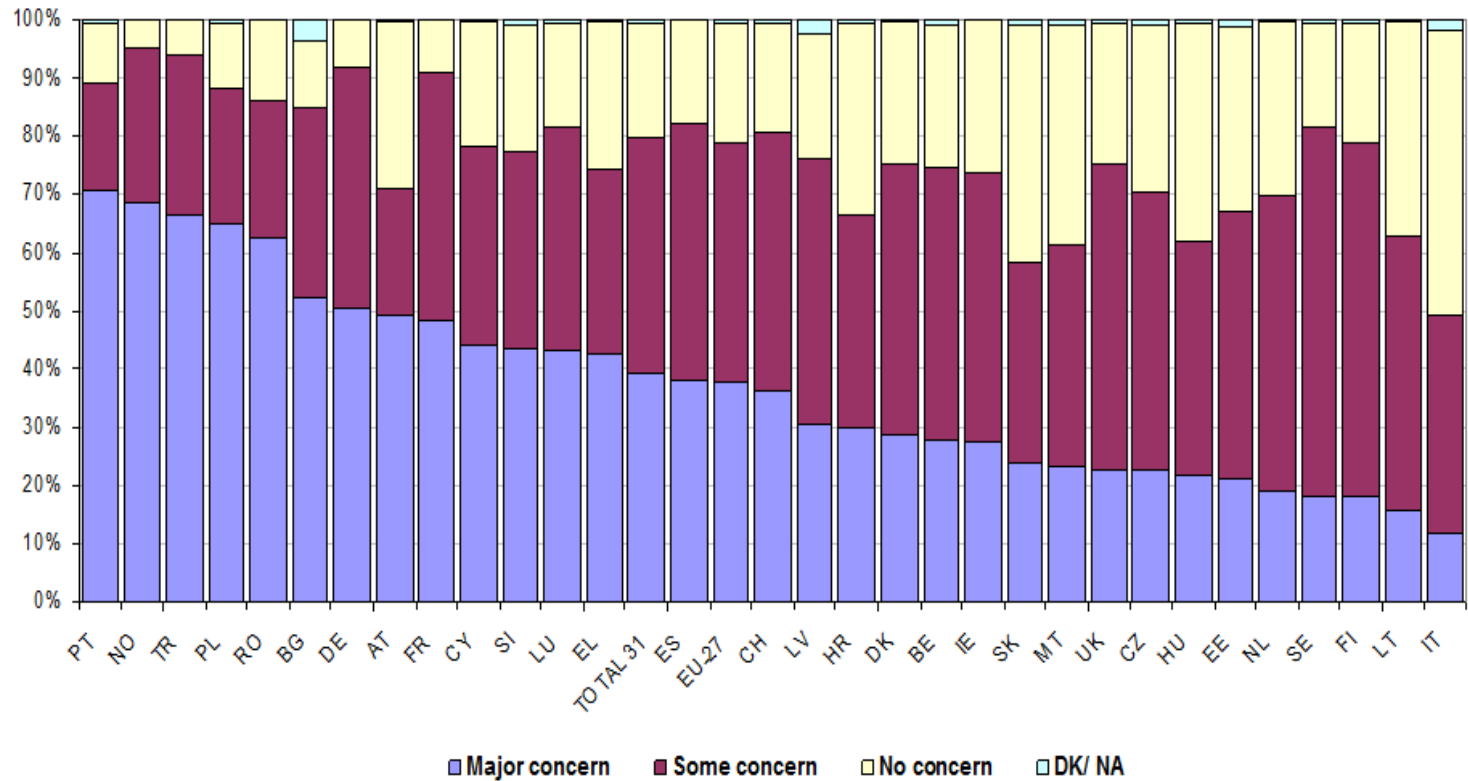
› BEHAVIOR CHANGE TECHNIQUES IN M-HEALTH APPLICATIONS FOR MENTAL AND PHYSICAL HEALTH OF KNOWLEDGE WORKERS

Noortje Wiezer

TNO innovation
for life



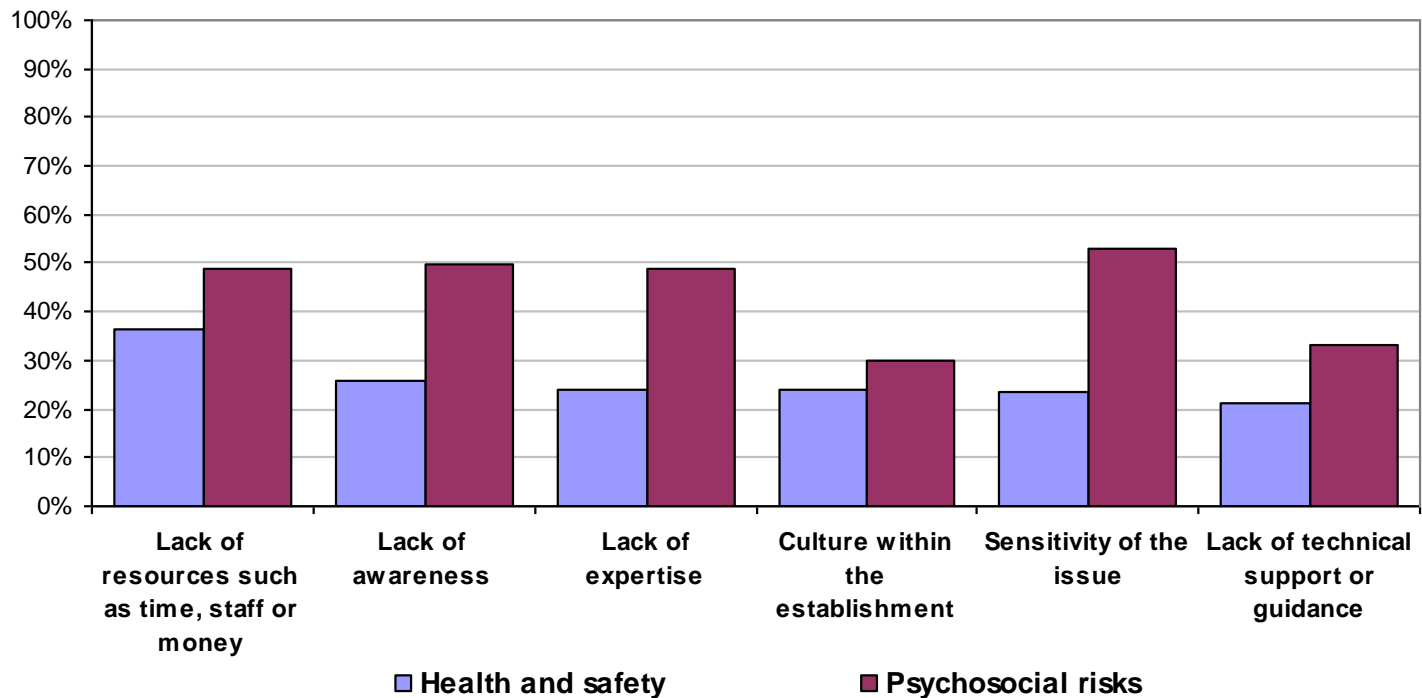
Risks in companies in Europe still existing



% establishments concerned with work related stress. Source: Esener 2009



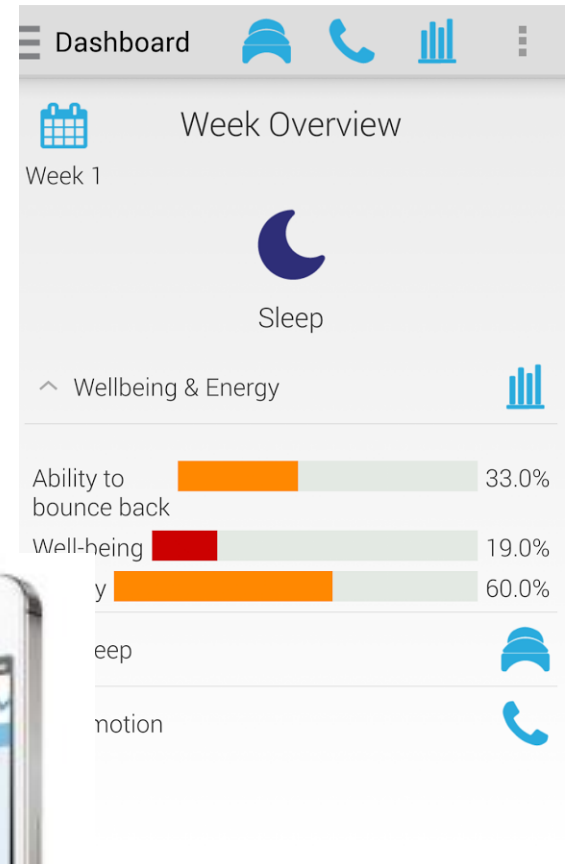
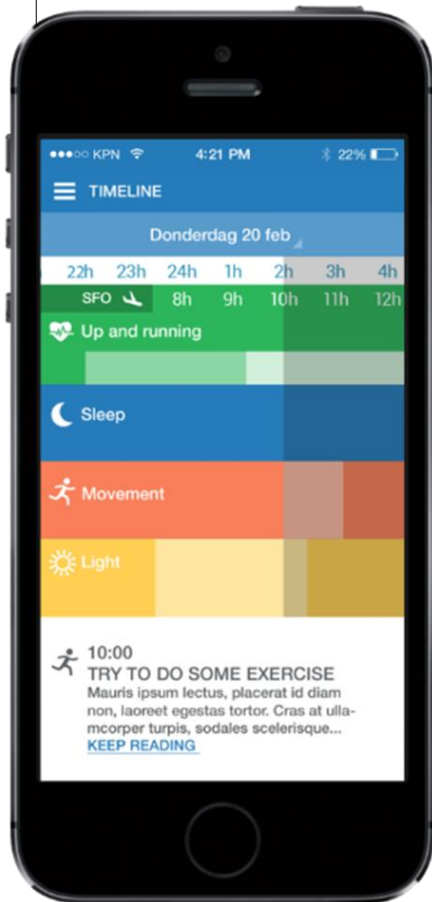
Obstacles for interventions



% establishments that indicated obstacles for interventions. Source: Esener 2009



Does information technology provides the solution?





Number of health apps is growing

File Edit View Favorites Tools Help

Page Safety Tools

Google Play

Work related stress



Apps

Zoeken Android-apps Alle prijzen Alle beoordelingen

Mijn apps

Winkelen







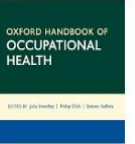




















Games

Familie

Gids voor ouders

Keuze van de redactie

Apps

 <p>Relaxing Anti-Stress Dandelion Soft</p> <p>★★★★★</p>	 <p>Office Yoga to De-Stress Daily Yoga Software Te</p> <p>★★★★★</p>	 <p>Back Pain Relief Sleep Learning</p> <p>★★★★★ €2,67</p>	 <p>Relax Lite: Stress & Anxiety Relief Saagara</p> <p>★★★★★</p>	 <p>Relax: Stress & Anxiety Relief Saagara</p> <p>★★★★★ €2,69</p>	 <p>Flight Attendant We FADAP</p> <p>★★★★★</p>	 <p>Oxford Handbook of Occupational Health MedHand Mobile Librar</p> <p>€39,07</p>	 <p>Runtastic Heart Rate Runtastic</p> <p>★★★★★</p>	 <p>Solitaire MobilityWare</p> <p>★★★★★</p>
 <p>Numero Logos Nur AltaVia srl</p> <p>★★★★★ €1,99</p>	 <p>Email My Texts zee Software Apps</p> <p>★★★★★ €1,00</p>	 <p>Insane Bodybuilding Bodybuilding-Apps.com</p> <p>★★★★★</p>	 <p>Tuner - DaTuner (Lite) Applaud Apps</p> <p>★★★★★</p>	 <p>Cyclus Kalender-Per ABISHKING</p> <p>★★★★★</p>	 <p>Swimmer (Breathing) Breathing Labs</p> <p>★★★★★</p>	 <p>Remote for iTunes Hyperfine</p> <p>★★★★★ €3,99</p>	 <p>Peace Starter Medit PersonePersona</p> <p>★★★★★</p>	 <p>Get Relaxed free! Kim Fleckenstein</p> <p>★★★★★</p>
 <p>Insane Bodybuilding Bodybuilding-Apps.com</p> <p>★★★★★</p>	 <p>Instant Heart Rate Azumio Inc.</p> <p>★★★★★</p>	 <p>Business Model Str Novay</p> <p>★★★★★</p>	 <p>Offline dictionaries NGHS.fr</p> <p>★★★★★</p>	 <p>Get Relaxed! Hypno Kim Fleckenstein</p> <p>★★★★★</p>	 <p>Cardiograaf - Cardic MacroPinch</p> <p>★★★★★</p>	 <p>Bristol HealthyOffice IES Cities project</p> <p>★★★★★</p>	 <p>ProHealth Tracker ProHealth</p> <p>★★★★★</p>	 <p>Spider Patiencespel Magma Mobile</p> <p>★★★★★</p>



M-health applications for work health promotion

- › Little is known on the quality and effectiveness of apps
- › Research shows that health interventions are more effective if rooted in Behavioral Change Techniques (BCT's)
- › Effective applications should be based on Behavioral Change Techniques as well



Aim of the study and research questions

- › Aim of the study: do M-health applications for work health promotion incorporate behavioral change techniques?
- › Research questions
 1. Which BCT's are used in apps aiming at work health promotion?
 2. Which BCT's are not used in apps? And why?
 3. Based on a and b: new requirements?



Behavioral Change Techniques Abraham and Michie (2008)

Behavior change techniques (Abraham & Michie, 2008)

1. Provide information about behavior health link
2. Provide information on consequences
3. Provide information about others' approval
4. Prompt intention
5. Prompt barrier identification
6. Provide general encouragement
7. Set graded tasks
8. Provide instruction
9. Model/ demonstrate the behavior
10. Prompt specific goal setting
11. Prompt review of behavioral goals
12. Prompt self-monitoring of behavior
13. Provide feedback on performance
14. Provide contingent rewards
15. Teach to use prompts/ cues
16. Agree behavioral contract
17. Prompt practice
18. Use follow up prompts
19. Provide opportunities for social comparison
20. Plan social support/ social change
21. Prompt identification as role model
22. Prompt self-talk
23. Relapse prevention
24. Stress management
25. Motivational interviewing
26. Time management



Approach

- Searched for applications in Itunes and Google Play
- Used a long list of search terms (for example: sitting and work, physical work, work health, work demands, wellbeing, workstress)
- Inclusion criteria:
 - Aimed at an individual
 - Aimed at healthy adults
 - Work related
 - Personalized feedback
 - English or Dutch
 - Stress prevention and/or psychosocial risk reduction and/or physical risk reduction and/or healthy lifestyle at work promotion



Results 1: Applications included

	Number
Total number of apps downloaded or looked into	304
Total number of apps included	44
Physical risk prevention	14
Psychosocial risk prevention	21
Lifestyle promotion	33
Itunes	22
Google Play	13
Itunes and Google Play	9
Free	28
Access code	3
Payed (€2,40 average)	13



Examples

2:31 PM
October 26, 2013

Are you ready?



Sitting exercises



Standing exercises



Meeting exercises

Skip

Mental INJURY
TOOLS FOR ONTARIO WORKERS

WORKPLACE STRESS Measurement

ENTER

Based on the
Copenhagen Psychosocial Questionnaire
(COPSOQ II)

This app built and maintained by
CCOHS
Canadian Centre for Occupational Health and Safety

FORSTENINGSCENTRE
OF AMSTERDAM

06:00 10:00 14:00 18:00 22:00 02:00

ACTIVITY GOAL 1:50

Mo	Tu	We	Th	Fr	Si	Today
		1:34				1:34

SLEEP GOAL 7:00

Mo	Tu	We	Th	Fr	Today	Su
	6:34				6:34	

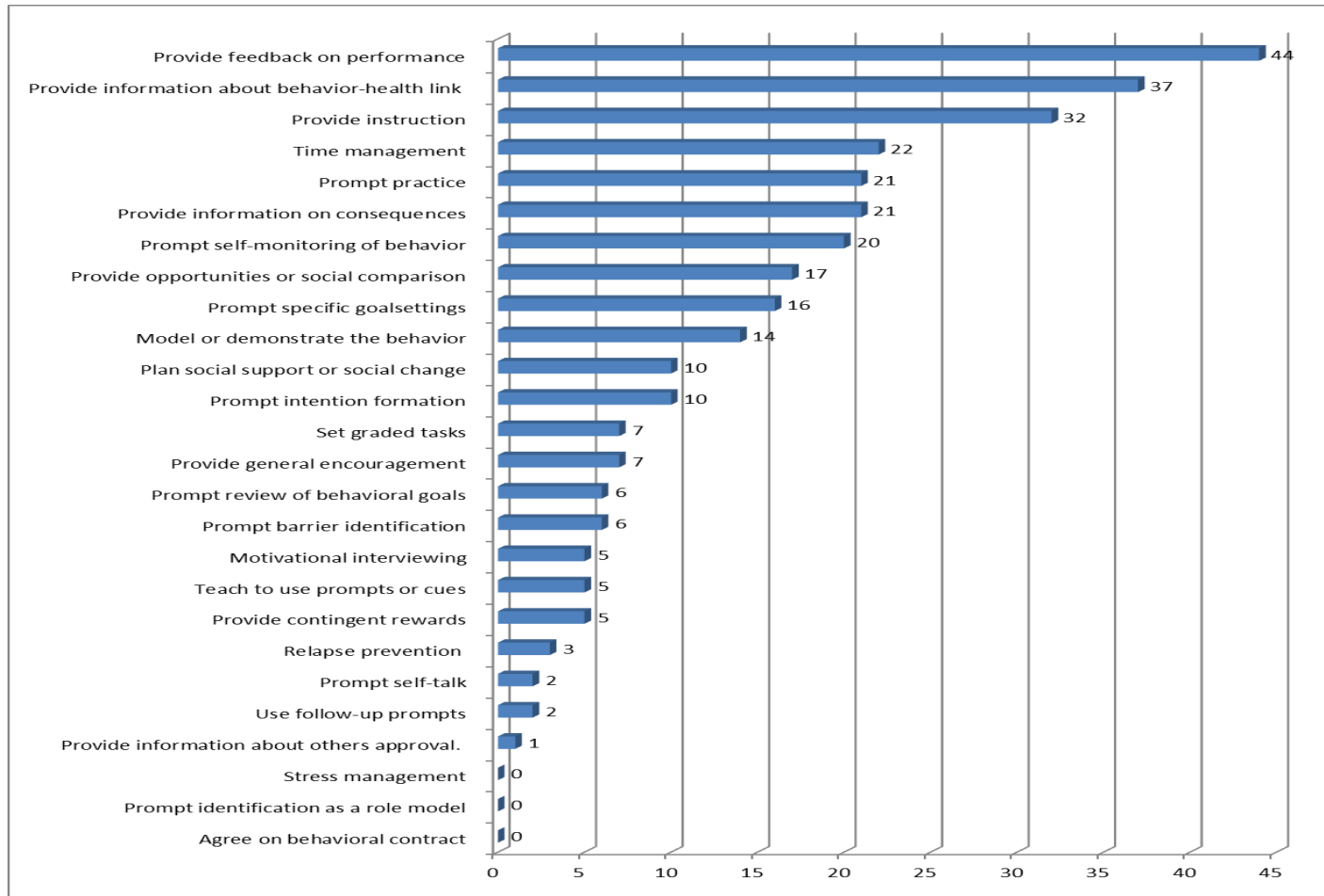
MENTAL RESILIENCE

75% past week 49% this week ?

Dashboard Messages Library Coach Account



BCT's in applications





BCT's applied in applications

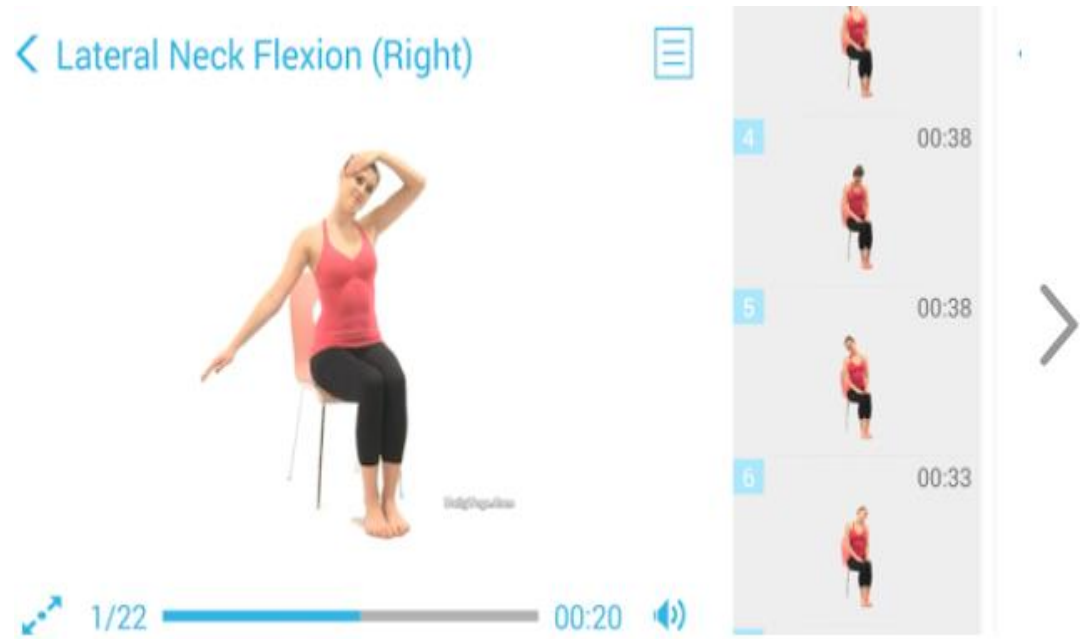
Average number of BCT's in applications	7,1
Highest number of BCT's in an application	16
Lowest number of BCT's in an application	2



Examples



Prompt practice



Model or demonstrate the behavior



Next step

- › Expert meeting (with app developers).
- › Question (for expert meeting, but also for you):
 - › Some BCT's are never or hardly ever scored: why not?
 - › Technical constraints
 - › Not a relevant BCT for apps?
 - › Never thought off..



Conclusion

- › In most applications some behavioral change techniques are used, but the number differs
- › Some techniques are used very often (provide information)
- › Others are not used (prompt identification as a role model)
- › We did not systematically reviewed the content and the quality of the information given, but there are large differences in quality between applications



WELLBEING AT WORK AMSTERDAM 2016

Interested in employee health,
organizational and workplace
factors, interventions or
methodological challenges?

VU University Medical Center
and TNO are proudly hosting
the fourth Wellbeing at
Work Conference 2016!

SAVE THIS DATE
MAY 29 - JUNE 1

A nighttime cityscape featuring a prominent bridge with blue lighting over a body of water. The background shows a city skyline with various lit-up buildings. In the foreground, a multi-lane highway shows light trails from moving vehicles, and streetlights illuminate the area. The overall scene is a vibrant urban night scene.

› **THANK YOU FOR YOUR
ATTENTION**

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