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DARE
DIGITAL LIFE-LONG PREVENTION

Towards the Italian version of the Work-related Rumination Scale

DEVELOPMENT AND PSYCHOMETRICS



22ND EUROPEAN CONGRESS OF WORK
AND ORGANIZATIONAL PSYCHOLOGY

EWOP

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Perseverative cognitions

= Repeated/Chronic activation of the cognitive representation of past (**Rumination**) and future stressors (**Worry**)

- Deeply implicated in psychological & somatic health
- Core mediator of stress-related disorders
Ottaviani et al (2016)

Perseverative cognition hypothesis

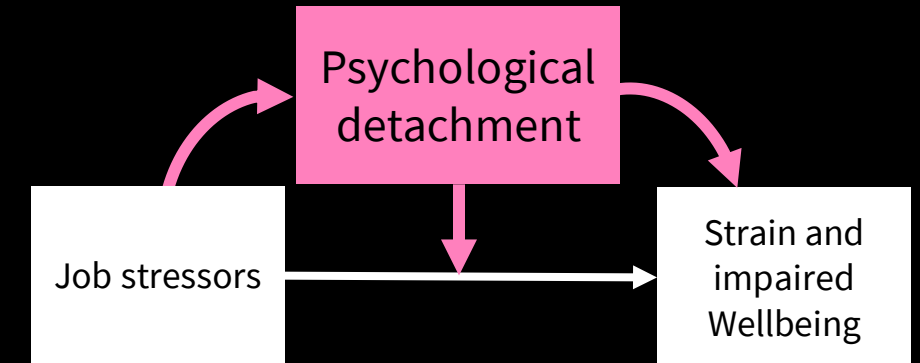
Response duration (**prolonged activation**), rather than magnitude, as the primary pathogenic aspect of stress, mediated by perseverative cognitions.

Brosschot et al (2006)

Stressor-Detachment Model

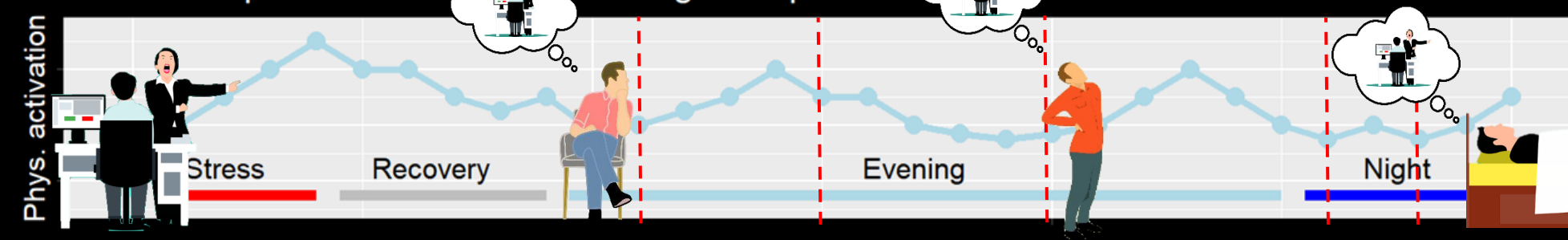
Recovery experiences leading to Psychological Detachment as a fundamental mediator and moderator of the stressor-strain relationship.

Sonnentag & Fritz (2015)



'Normal' response

Prolonged response





Work-related Rumination (and worry)

Work intensification, mobile devices, remote work, «always-on» culture, overwork climates
→ Rumination as the rule rather than an exception



Affective Rumination

= thoughts about work that are negative in affect, intrusive, pervasive and recurrent

“I become tense when thinking about work-related issues in my free time.”



Problem-solving Pondering

= unemotional thoughts revolving around a particular problem or previous work in search of a solution or improvement

“I find solutions to work-related problems in my free time.”



Detachment

= state of absence of ruminative thoughts, that can be used to assess employees ability to switch-off from work


“I make myself switch off from work as soon as I leave”

(Cropley and Zijlstra 2011; Cropley et al 2012)

Work-related Rumination Scale (WRRS)



1. Become tense when think about work-rel. issues in free time ?
2. Find solutions to work-rel. problems in free time
3. Make myself switch off from work as soon as I leave
4. In free time find myself reevaluating something done at work
5. Be troubled by work-rel. issues when not at work ?
6. (R) Feel unable to switch off from work ?
7. Become fatigued by thinking work-rel. issues in free time ?
8. After work tend to think how can improve work performance
9. Be irritated by work issues when not at work ?
10. Able to stop thinking about work-rel. issues in free time
11. Find thinking about work in free time helps to be creative
12. Leave work issues behind when leave work ?
13. Think about tasks to be done at work the next day ?
14. Find it easy to unwind after work ?
15. Be annoyed by thinking work-rel. issues when not at work ?

- **15 items** originally proposed by Cropley et al. (2012) 
- Not based on 'proper' scale development process

work. To gain greater understanding of the unwinding process, a list of ruminating items about 'switching off' from work was specifically generated and subsequently assessed for clarity, relevance and comprehensibility by the researchers and within a series of focus groups with employees working in a range of organizations. Instructions requested respondents to answer in terms of the frequency they experience such thoughts in their leisure time. The questions were said to have face validity. Next, a 25-item version of the questionnaire was piloted on an independent group of 110 white-

collar workers (56.6% females; age range, 22 to 64 years). The response format utilized a five-point Likert-type scale (1 = very seldom or never, 2 = seldom, 3 = sometimes, 4 = often and 5 = very often or always). Factor analysis was carried out on the 25 work-related rumination questions within the present sample of 268 workers. Three factors emerged with eigenvalues greater than one, together accounting for 69.50% of the variance. An oblimin rotation was performed; variables were loaded on a single factor on the basis of the highest score, and items with a loading greater than 0.4 were

- Mostly on Rumination, with just one Worry item (item 13)
- Mixed item wording (6 statements + 9 questions)
- 5-point Likert scale analyzed with ML-based (presumably) EFA
- Yet, the **most widely used tool** adapted in multiple languages



Factor structure across languages



Cropley et al (2012)

ML-EFA: 3-factor ($n = 268$ mainly white-collars)



Querstret and Cropley (2012)

ML-CFA: 3-factor ($n = 719$ mainly white-collars)

No info on the model fit



Firoozabadi et al (2018)

Back-translation (no Detachment)

ML-MCFA: 2-factor ($n = 171$ white-collars)

→ **Better fit than 1-factor model**



Akyuz & Sulak (2019)

Back-translation + Expert consultation

ML-CFA: 3-factor ($n = 582$ white-collars)



Syrek et al (2017)

(no Detachment)

ML-CFA: 2-factor ($n = 74$ working students)

“taking the nested data structure into account”

→ **Better fit than 1-factor model**

No info on scale development



Weigelt et al (2019)

3 dimensions + positive & negative work refl.

DWLS-CFA: 5-factor ($n = 474$ working students)

→ **Better fit than 1-, 3-, and 4-factor models**



Pauli et al (2023)

ML-CFA: 3-factor ($n = 2,207$ blue/white-collars)

→ **Better fit than 1-factor model**

→ **Metric & Partial scalar invariance EN – DE**

→ **Scalar invariance across genders, ages, ISCO groups, and weekdays**



Rosario-Hernández et al (2021)

WLSMV-CFA + ESEM: 3-factor ($n = 4,100$ workers)

Removal of 4 items (5, 6, 13, 14) with cross-loadings

→ **Better fit than 1- and 2-factor models**

→ **Scalar invariance across gender and age**

No info on scale development



Silva-Costa et al (2023)

Back-translation + Expert consensus + Pre-test

WLSMV-CFA: 3-factor ($n = 173$ admin workers)

→ Bad fit (cross-loadings)



Baka et al (2024)

Back-translation

ML-CFA: 3-factor ($n = 503$ school teachers)

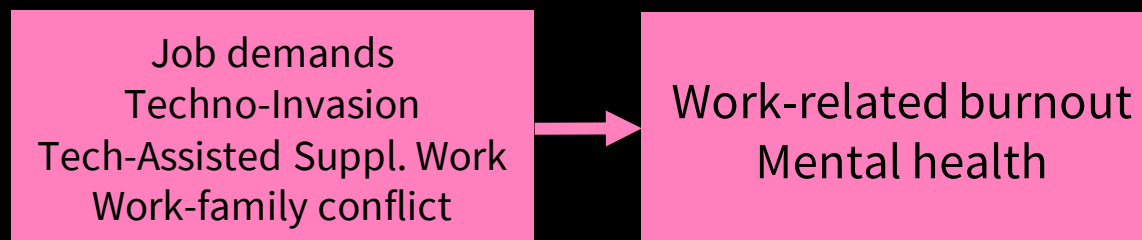
Removal of 3 items (5, 11, 14) with loadings $< .5$



Aims and hypotheses

Goals: To adapt the WRRS in Italian and evaluate its reliability, factorial structure, validity, and measurement invariance

- **Factorial structure:** Better fit for the 3-factor model
- **Validity:** Standardized loadings > .60
- **Invariance:** Gender, age, occupational group, Italian area
- **Predictive validity:** Correlations with stressors & strains



Background

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Development

●○○

Psychometrics

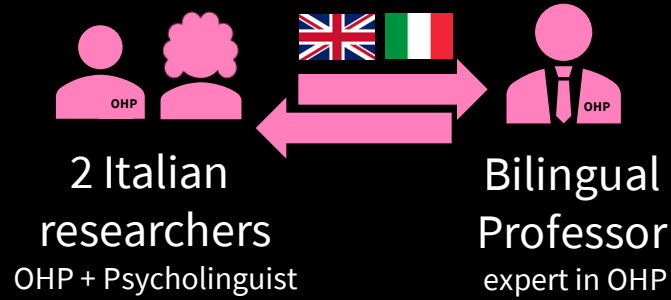
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Discussion

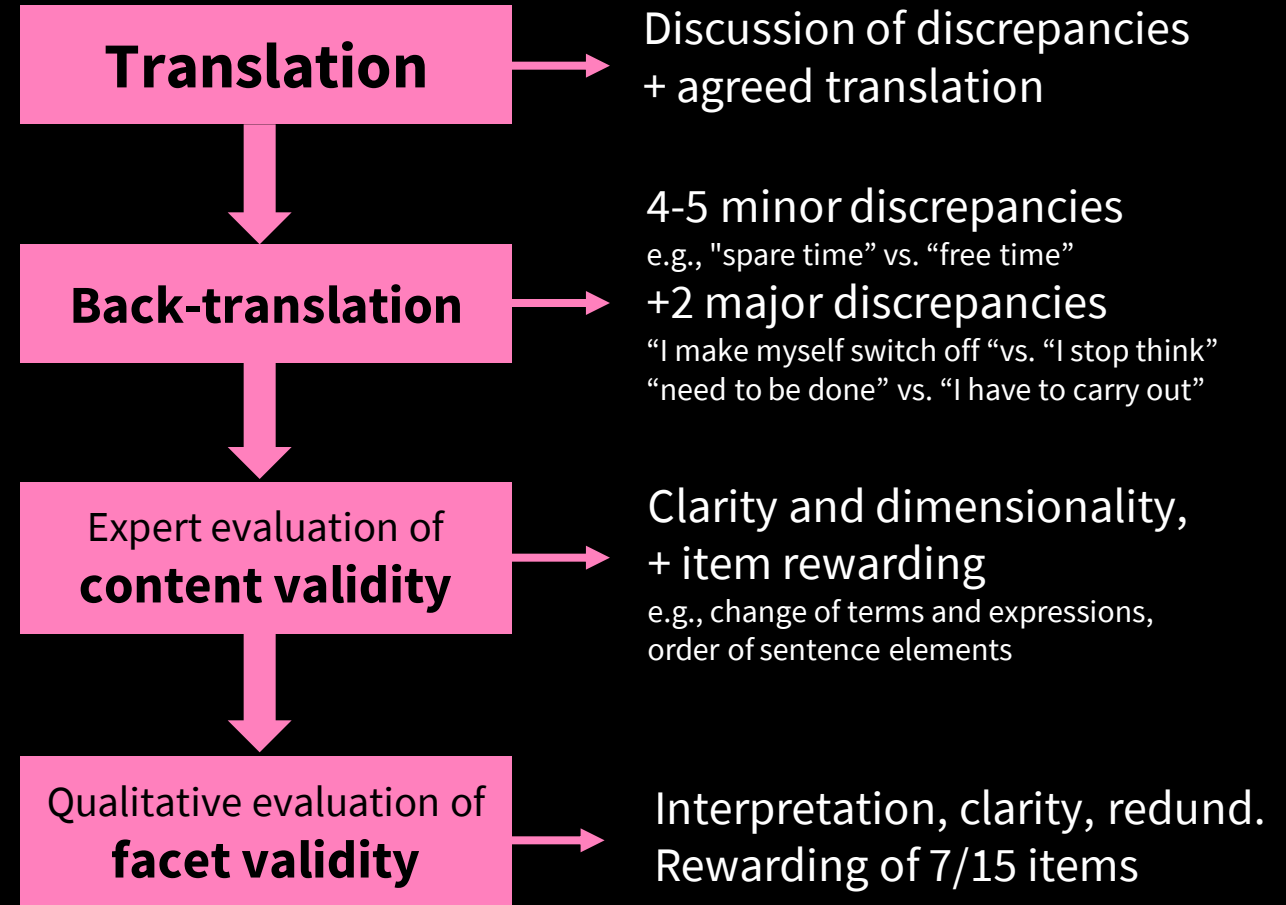
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Linguistic & cultural adaptation



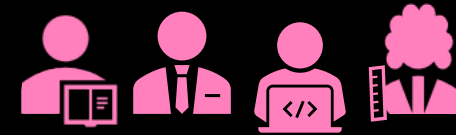
Phone interview with 13 workers (5 F, 41 ± 13y)
from various sectors (6 blue-collars, 7 white-collars)



Content validity

clarity dimens

1. Become tense when think about work- rel. issues in free time ?	2.75	3/3
2. Find solutions to work-rel. problems in free time	2.75	2/3
3. Make myself switch off from work as soon as I leave	2.75	3/3
4. In free time find myself reevaluating something done at work	1.75	1.5/3
5. Be troubled by work-rel. issues when not at work ?	2.75	3/3
6. (R) Feel unable to switch off from work ?	2.75	2/3
7. Become fatigued by thinking work- rel. issues in free time ?	2.50	2/3
8. After work tend to think how can improve work performance	2.75	3/3
9. Be irritated by work issues when not at work ?	2.25	3/3
10. Able to stop thinking about work- rel. issues in free time	2.75	1/3
11. Find thinking about work in free time helps to be creative	2.50	2/3
12. Leave work issues behind when leave work ?	2.75	2/3
13. Think about tasks to be done I'll to do at work the next day ?	2.50	1.5/3
14. Find it easy to unwind after work ?	2.75	2/3
15. Be annoyed by thinking work- rel. issues when not at work ?	2.50	3/3



Individual evaluation of item clarity (1-3) + content overlapping with dimension (yes/no)

Overall

- Item 4: "Rethink/Reevaluate/Question" vs. "**Reconsider**"
- Items 1,7: "I become tense/fatigued" vs. "**It makes me ...**"
- Item 13: "tasks that need to be done" → "**what I will have to do**"

Psycholinguist

- In Italy, it might be implicitly negative to think about work during free time → "**think about work issues**" (similar to Brazilian Portuguese version)

Psychometrician

- Poor standardization due to mixed wording
→ **all items rephrased as statements (no questions)** (opposite to Brazilian Portuguese version)

Translator

- Item 8: Simplification of "~~tend to~~ think of how ..."

Facet validity

clarity interp redund

1. Be tensed when think about work issues in free time	3.0	2.9	0/13
2. Find solutions to work-rel. problems in free time	2.8	3.0	0/13
3. Make myself switch off from work as soon as I finish working	2.8	2.9	2/13
4. In free time find myself reevaluating something done at work	2.8	2.8	3/13
5. Be troubled by work-rel. issues when not at work	2.8	2.8	3/13
6. (R) Feel unable to switch off from work	2.8	2.8	4/13
7. Be fatigued by thinking about work issues in free time	2.8	2.6	3/13
8. After work think how can improve work performance	2.9	2.8	0/13
9. Be irritated by work issues when not at work	2.9	2.8	4/13
10. Able to stop thinking about work issues in free time	2.7	3.0	4/13
11. Find think. about work in free time helps be creative at work	2.9	2.7	3/13
12. Leave work issues behind when leave work	2.9	2.9	4/13
13. In free time think what I'll have to do at work the next day	2.6	2.8	1/13
14. Find it easy to unwind after work	3.0	3.0	3/13
15. Be annoyed by thinking work issues when not at work	2.9	3.0	7/13



Phone-based pre-test with 13 workers responding by thinking aloud (interpretation) + rating of clarity (1-3) and redundancy (yes/no)

- DE items: Highest redundancy
- PP items: Less sense for manual workers
- Item 3: “as I leave” → “as I finish working” (onsite or remote)
- Item 6: “I cannot switch off” [never] → “I feel [never] unable to ...”
- Item 7: “It makes me tired” → “It makes me fatigued”
- Item 11: “helps me to be creative in what!?” → “at work”
- Item 13: “when should I think about next-day work tasks!?” → “In my free time, I think about ...”

Background

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Development

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Psychometrics

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Discussion

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Sample 1: Preliminary test

Participants



300 employed adults (49% F, 39 ± 13y)

52% profess, 29% technicians/associates, 9% managers, 10% other

Job tenure: 11 ± 12y; 40 ± 9 weekly working hours

85% employees vs. 25% managers/freelance/project

46.3% hybrid/remote

Procedure



Informed consent +

Online (57%) / Tabled-based (43%)

questionnaire administration (~20 min)

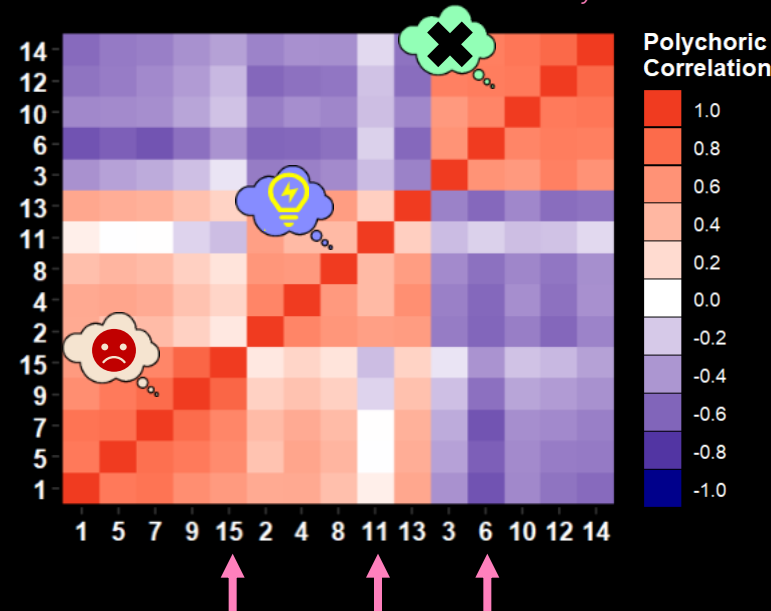
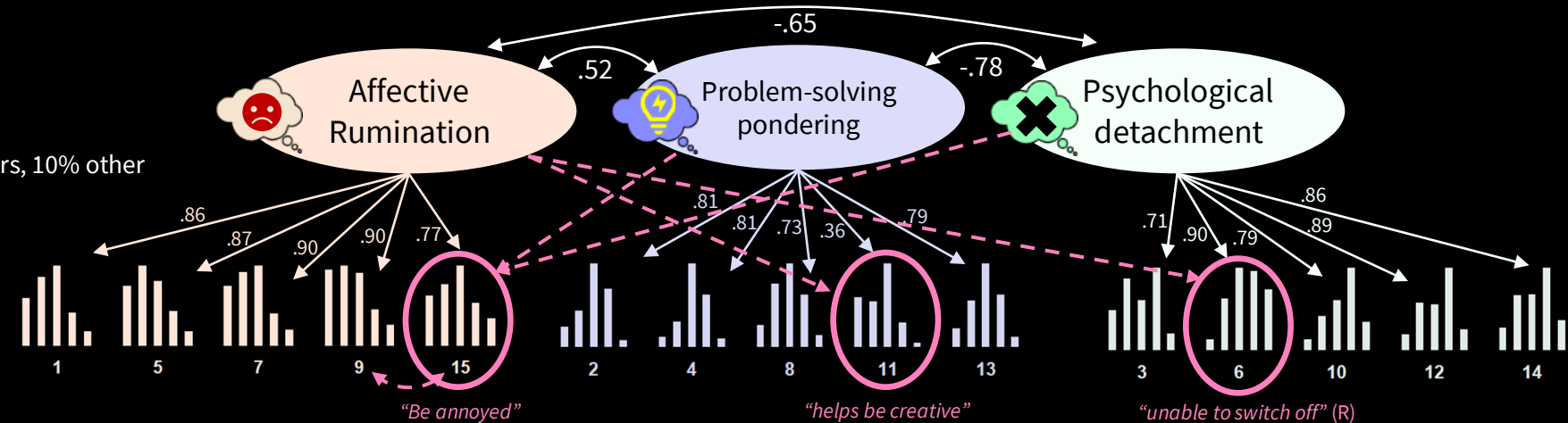
Exclusion criteria:

- unemployed/trainees
- less than 18 work hours / week
- nocturnal shifts
- careless resp. (attention checks)

Data analysis

CFA with DWLS estimator

(replicated with ML and MLR)



	No. Par.	RMSEA	CFI	TLI	SRMR
3F	78	.133	.981	.977	.093
2F	76	.151	.975	.971	.103
1F	75	.235	.940	.930	.155
3F: item reduction based on Modification Indices > 50					
- 11	73	.117	.987	.984	.077
- 11,15	68	.082	.994	.992	.055
- 11,15,6	63	.055	.997	.996	.047

Sample 2: Confirmatory analyses

Participants



2,094 employed adults (50% F, 47 ± 13y)

31% profess, 23% technicians/associates, 14% managers, 32% other

Job tenure: 17 ± 12y; 38 ± 9 weekly working hours

76% employees vs. 25% managers/freelance/project

41% hybrid/remote

Procedure



Informed consent +

Online administration (~20 min)

Exclusion criteria:

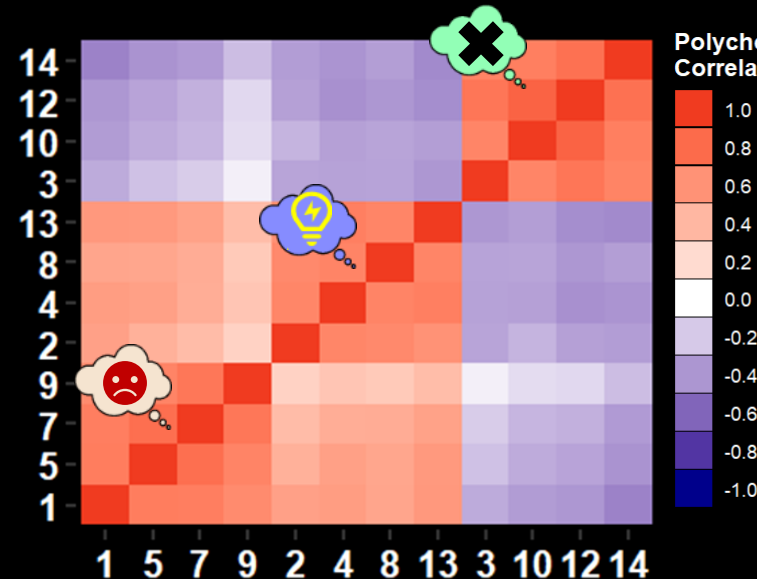
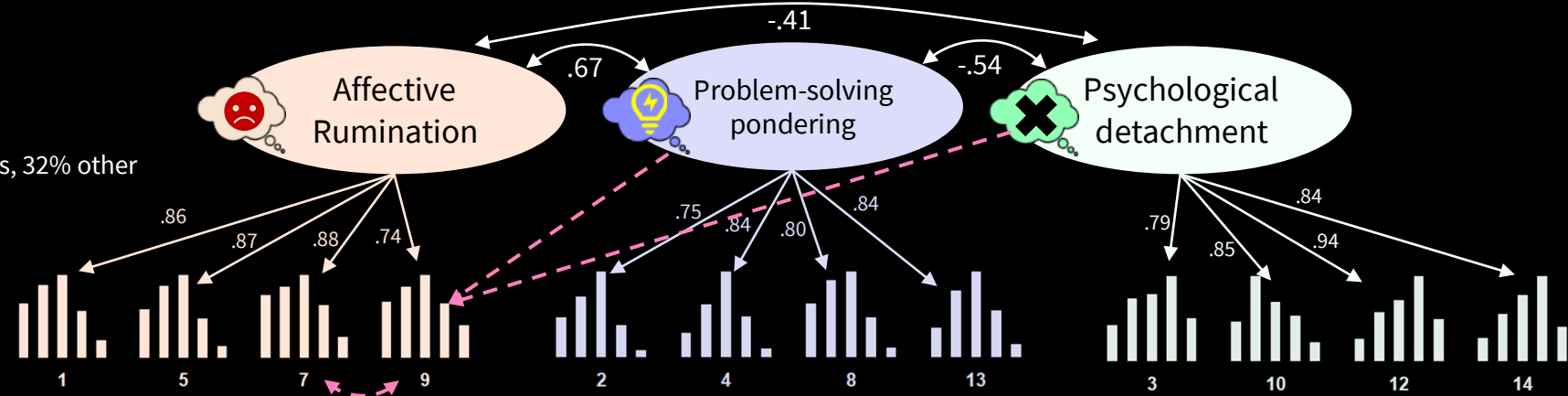
- unemployed/trainees
- less than 18 work hours / week
- nocturnal shifts
- careless resp. (attention checks)

Data analysis

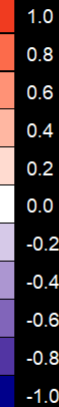


CFA with DWLS estimator

(replicated with WLSMV, ML, and MLR)



Polychoric
Correlation



No. Par.

RMSEA

CFI

TLI

SRMR

3F

63

.090

.993

.991

.056

2F

61

.166

.974

.968

.099

1F

60

.306

.912

.893

.179

Background

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Development

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Psychometrics

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Discussion

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Sample 2: Measurement invariance

Gender

n = 2,090

	No. Par.	RMSEA	CFI	TLI	SRMR	ΔCFI
Configural	126	.089	.993	.991	.057	
Metric	117	.087	.993	.991	.058	0
Scalar	84	.075	.993	.994	.057	0

Age

n = 1,824

Configural	252	0.095	0.992	0.99	0.062	
Metric	225	0.094	0.991	0.99	0.065	-.001
Scalar	126	.073	.993	.994	.063	.002

ISCO

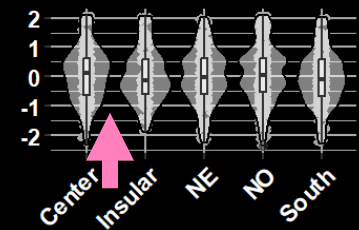
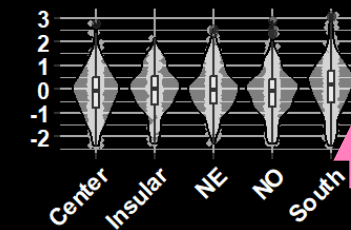
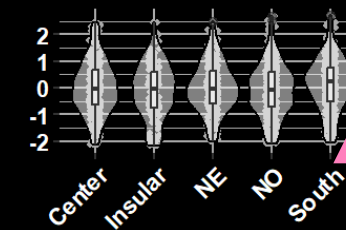
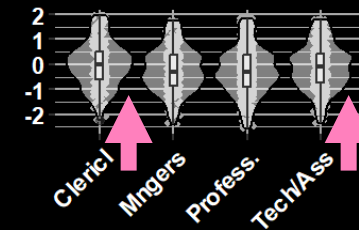
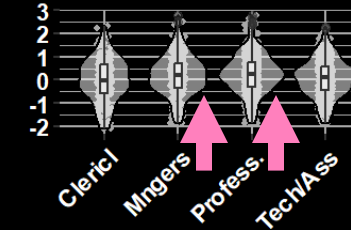
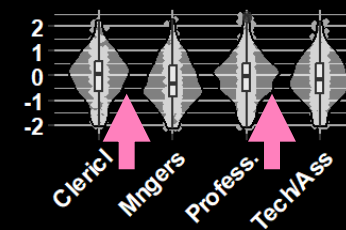
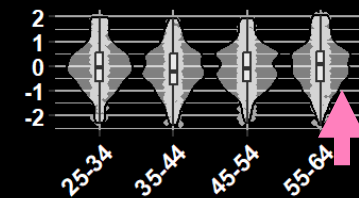
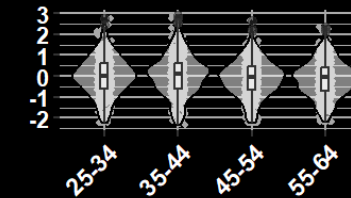
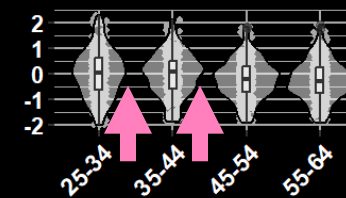
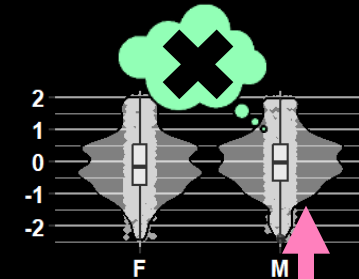
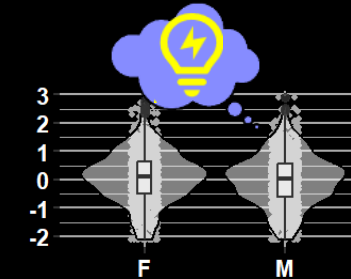
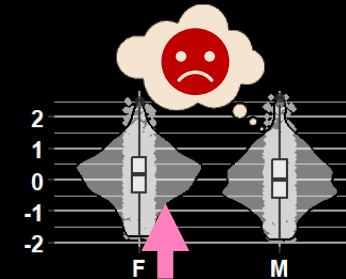
n = 1,672

Configural	252	.091	.993	.991	.061	
Metric	225	.088	.993	.992	.063	0
Scalar	126	.070	.993	.995	.061	0

NUTS-IT

n = 2,094

Configural	315	.090	.993	.991	.060	
Metric	279	.093	.992	.991	.064	-.001
Scalar	147	.068	.994	.995	.060	.002



Sample 2: Predictive validity

Stressors

-0.3	-0.31	-0.3	-0.38
0.43	0.54	0.53	0.53
0.53	0.45	0.24	0.64

Job demands

Quantitative
Workload Inventory
(5 items, $\omega = .89$)

Techno-invasion

Techno-stress
creators subscale
(3 items, $\omega = .89$)

TASW

Technology-assisted
supplemental work
(4 items, $\omega = .93$)



WFC

Work-family conflict scale
(4 items, $\omega = .95$)

Strains

-0.26	-0.24	-0.27
0.36	0.35	0.35
0.61	0.39	0.46

Work-rel. Burnout

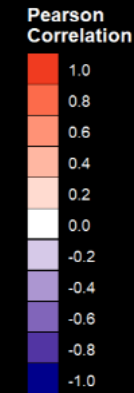
Copenhagen Burnout
Inventory subscale
(5 items, $\omega = .94$)

Sleep disturbances

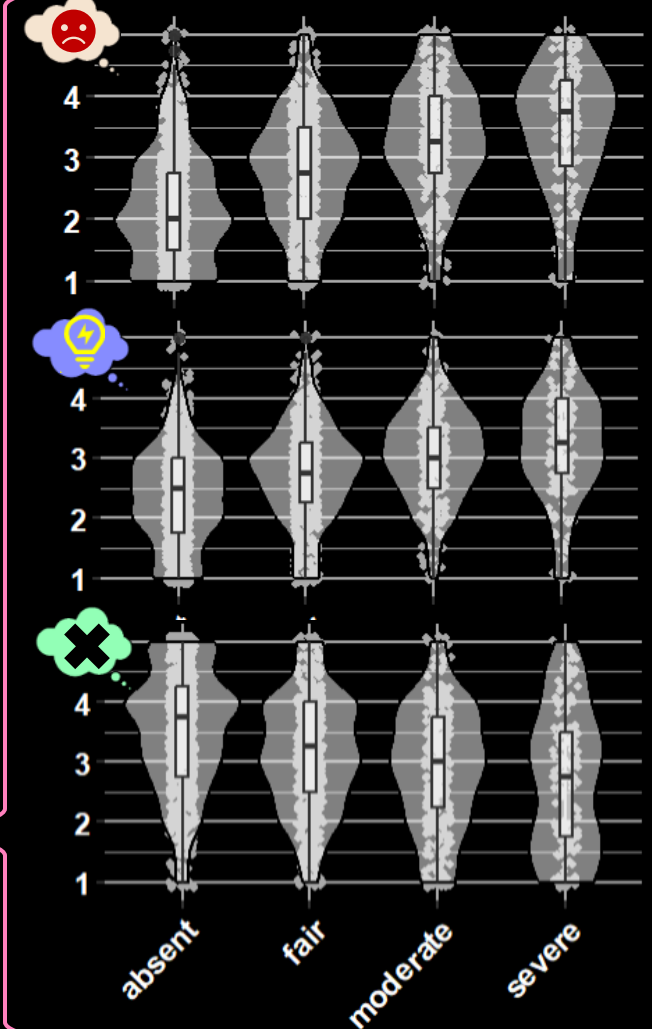
Mini-Sleep Questionnaire
(4 items, $\omega = .88$)

Mental health

PHQ-2 + GAD-2
(4 items, $\omega = .90$)



Mental health risk





IT-WRRS

Valid and reliable measure of work-related perseverative cognitions experienced during ‘free time’

- Rigorous scale adaptation
- 12-item reduced form adapting better than original version
- Invariance across gender, age, occupational, & geographic groups
- Expected associations with stressors and strains (also clinical)

Limitations

- Cross-sectional, common-method bias
- Lack of cross-cultural datasets
- Lack of clear distinction between manual vs. intellectual workers





Implications & future directions

Problem-solving pondering: should we say yes?



- Conceptualized as unemotional, harmless, positive, yet strongly correlated with Affective Rumination
- Equally contributing to lack of detachment, similarly related to stressors and strains

Other facets of work-related perseverative cognitions

- Conceptual redundancy of rumination and detachment
- Positive vs. Negative work reflection
- Task- vs. Relationship-related rumination
- Past (rumination) vs. Future (worry)

Primary + Secondary prevention of work-related stress



- Crucial role of work-life balance policies and programs
- Cognitive Control Training, Metacognitive therapy, & mindfulness (Watkins & Roberts, 2020)



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Thank You!

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- QR lucamenghini.github.io/pResentations

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DARE
DIGITAL LIFELONG PREVENTION

IT-WRRS final version



Original WRRS

IT-WRRS

AR

1. Do you become tense when you think about work-related issues in your free time?

1. Mi agita pensare alle questioni di lavoro durante il tempo libero

PP

2. I find solutions to work-related problems in my free time

2. Nel tempo libero trovo soluzioni a problemi di lavoro

DE

3. I make myself switch off from work as soon as I leave

3. Appena finisco di lavorare smetto di pensare al lavoro

4. In my free time I find myself reevaluating something I have done at work

4. Nel tempo libero riconsidero delle cose che ho fatto al lavoro

5. Are you troubled by work-related issues when not at work?

5. Mi preoccupa pensare a questioni di lavoro quando non sto lavorando

6. Do you feel unable to switch off from work? (R)

6. Mi sento incapace di staccare mentalmente dal lavoro

7. Do you become fatigued by thinking about work-related issues during your free time?

7. Mi affatica pensare a questioni di lavoro durante il tempo libero

8. After work I tend to think of how I can improve my work-related performance

8. Dopo il lavoro penso a come potrei migliorare le mie prestazioni lavorative

9. Are you irritated by work issues when not at work?

9. Mi innervosisce pensare a questioni di lavoro quando non sto lavorando

10. I am able to stop thinking about work-related issues in my free time

10. Nel tempo libero riesco a smettere di pensare a questioni di lavoro

11. I find thinking about work during my free time helps me to be creative

11. Pensare al lavoro durante il tempo libero aiuta la mia creatività sul lavoro

12. Do you leave work issues behind when you leave work?

12. Quando finisco di lavorare, mi lascio le questioni lavorative alle spalle

13. Do you think about tasks that need to be done at work the next day?

13. Nel tempo libero penso a cosa dovrò fare al lavoro il giorno dopo

14. Do you find it easy to unwind after work?

14. Per me è facile "staccare la spina" dopo il lavoro

15. Are you annoyed by thinking about work-related issues when not at work?

15. Mi infastidisce pensare a questioni di lavoro quando non sto lavorando

AR = Affective Rumination; PP = Problem-solving Pondering; DE = Detachment