From risk factors to risk constellations : adopting a person centered approach to psychosocial risk analysis.

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- Challenges for current practices
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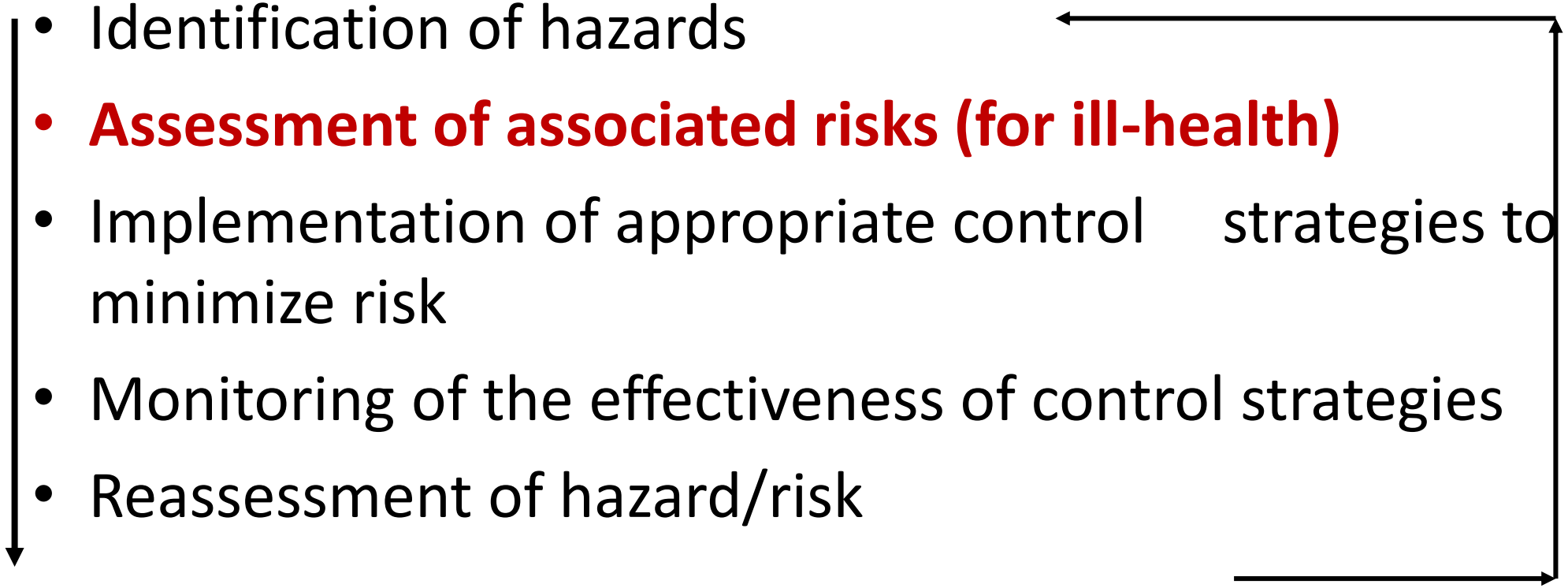
Context

- Legal requirement : 5a’s
  - Organisation
  - Job content
  - Work relations
  - Physical working conditions
  - Working conditions
- Global psychosocial risk analysis : managing these 5 types to manage stress and ill-healht
- Organisation wide survey analysis
- 99% Cross-sectional

A risk control perspective

(Cox, 1993; Cox & Griffiths, 1995; Cox, et al., 2000)

- Identification of hazards
- **Assessment of associated risks (for ill-health)**
- Implementation of appropriate control strategies to minimize risk
- Monitoring of the effectiveness of control strategies
- Reassessment of hazard/risk



RESIDUAL RISK

Assessement of the associated risk

- Lamotte & Van Emelen (1995) influencing risk is managing exposure (risk = f(harm, exposure).
- Clarke and Cooper (2000: 179 – 180): Risk factor = E *C ; where

  E het perceived level of stressors (EXPOSURE) and

  C is correlation (R^2) between stressor and stress (consequences / harm)

  Result : ordering of risk factors
- Biron et al (2006)

Table II. Calculations of risk level per factor with the original Clarke and Cooper (2000) formula and the proposed extended formula for the nurses' sample ($n = 660$)

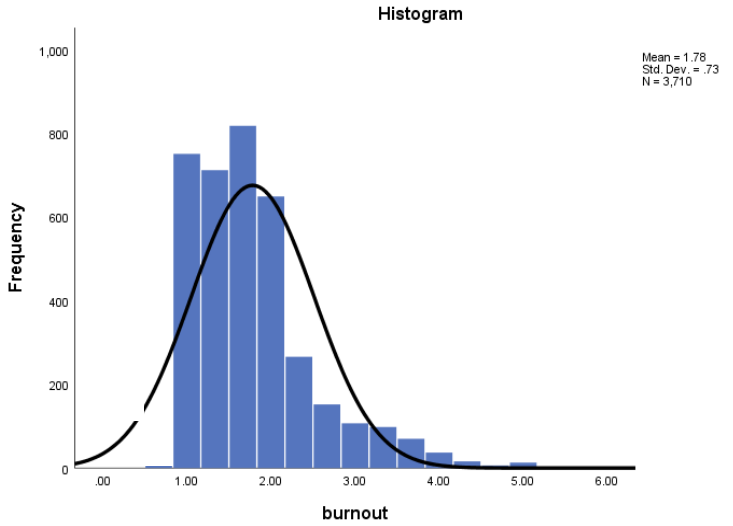
	Original formula ($E \times C$)				Extended formula ($E \times K \times C$)			
Risk factor	E	C	Risk	Rank	EK	C	Risk	Rank
Work overload	49.46	0.37	18.06	1	21.99	0.41	9.11	1
Poor career opportunities	54.77	0.14	7.52	2	24.63	0.24	5.87	2
Low recognition by colleagues and superior	45.09	0.13	6.02	3	20.08	0.24	4.88	4
Security problems	48.31	0.11	5.12	4	21.48	0.19	3.98	8
Role conflict	22.67	0.19	4.34	5	10.13	0.29	2.95	12
Low participation in decision-making	53.61	0.07	3.77	6	23.88	0.18	4.41	5
Poor relationships with employees	41.76	0.09	3.74	7	18.22	0.17	3.05	11
Responsibility for people	79.04	0.05	3.60	8	34.87	0.16	5.62	3
Physical environment	27.92	0.13	3.54	9	12.40	0.19	2.40	15
Work–home conflict	38.11	0.09	3.48	10	17.07	0.17	2.93	13
Poor relationships with doctors	53.07	0.06	3.42	11	23.83	0.17	4.06	7
Poor relationships with superior	54.88	0.06	3.26	12	24.44	0.18	4.31	6
Low decision authority	47.68	0.06	3.03	13	21.49	0.17	3.73	9
Competition	42.26	0.07	2.90	14	19.01	0.15	2.77	14
Poor relationships with colleagues	38.31	0.07	2.49	15	17.44	0.19	3.23	10
Job insecurity	30.53	0.08	2.47	16	13.78	0.15	2.05	17
Role ambiguity	30.76	0.06	1.79	17	14.06	0.14	1.99	18
Poor relationships with clients	29.62	0.06	1.79	18	13.53	0.14	1.89	19
Poor relationships with other units	49.80	0.02	0.83	19	22.63	0.10	2.17	16
Low skill discretion	27.78	0.02	0.53	20	12.44	0.07	0.93	20

Note: Scales are, respectively, Exposure (E) = 0 to 100, Exposure × Coping (EK) = 0 to 100, Consequences (C) = 0 to 1, Risk = 0 to 100, Rank = 1 to 20 (1 = highest risk).

- Most common practice consultants : impact maps

Challenges with these approaches

- When correlational methods are used → capitalization on chance + see next points
- Alternative: Regression methods : to estimate risk for stress and ill-health
  - More than one dependent variable → SEM (hardly done in practice)
  - While Y = a +bx1 + cx2+e, the implicit assumption is that of causal orderin while having most often only cross-sectional data?
    - Cross Lagged Panel studies → reciprocal results
    - Person centered CLP are very uncommon indeed
  - Skewness and kurtosis dependent variables
    - leads to untrustworthy s.e (Vermunt & Magidson, 2005) → H0 vs Ha ?
    - validity issues may a arise
      - Transformation → brings us to a language far from the questionnaire
      - Categorization allows for multinomial regression models but how to categorize without being arbitrary



  - Assumption of homogeneity of 'b' across the members of the organization. Hence it applies to all irrespective of their location, department, occupational level
  - Heterogeneity is 'dealt with' by controls and moderation models.
    - huge number of dummies of departments / functions → solution multilevel? → too small n (90%SME)

Towards a person centered approach

- Is a variable centered really so interesting for a risk analysis perspective?
- Is it not a bit arrogant to imply a causal ordering?
- Should we really neglect the fact that luckily our dependents are skewed
- What about unobserved heterogeneity? What if some employees share something that is not directly observable? Perhaps some are sick because of role stress and bullying, perhaps some others are sick because the rewards do not match their effort, and what if others are engaged because they experience a resourceful work environment?
- Would it not be interesting to explore the latter and set up intervention targeted to those employees that are likely to face a type of issues, challenges
- Solution : latent class modelling on latent variable scores.
  - Does not rely upon the strict assumptions (normality)
  - Can treat different types of measurement scales
  - Like factor analysis it is a reduction technique
  - Use to identify (hidden) profiles (latent classes) = nominal latent variable
  - Person centered

Methods

- **Sample.** 11 organizations where I used this approach,
- **Measures.** All these organizations used the SIMPH 5A (Notelaers, 2019) to comply with the Belgian regulatory framework to adopt the European Directive.
- **Statistical analysis.** To explore unobserved heterogeneity Latent Gold 5.1 (Magidson & Vermunt, 2018) was used.

Results : how many profiles?

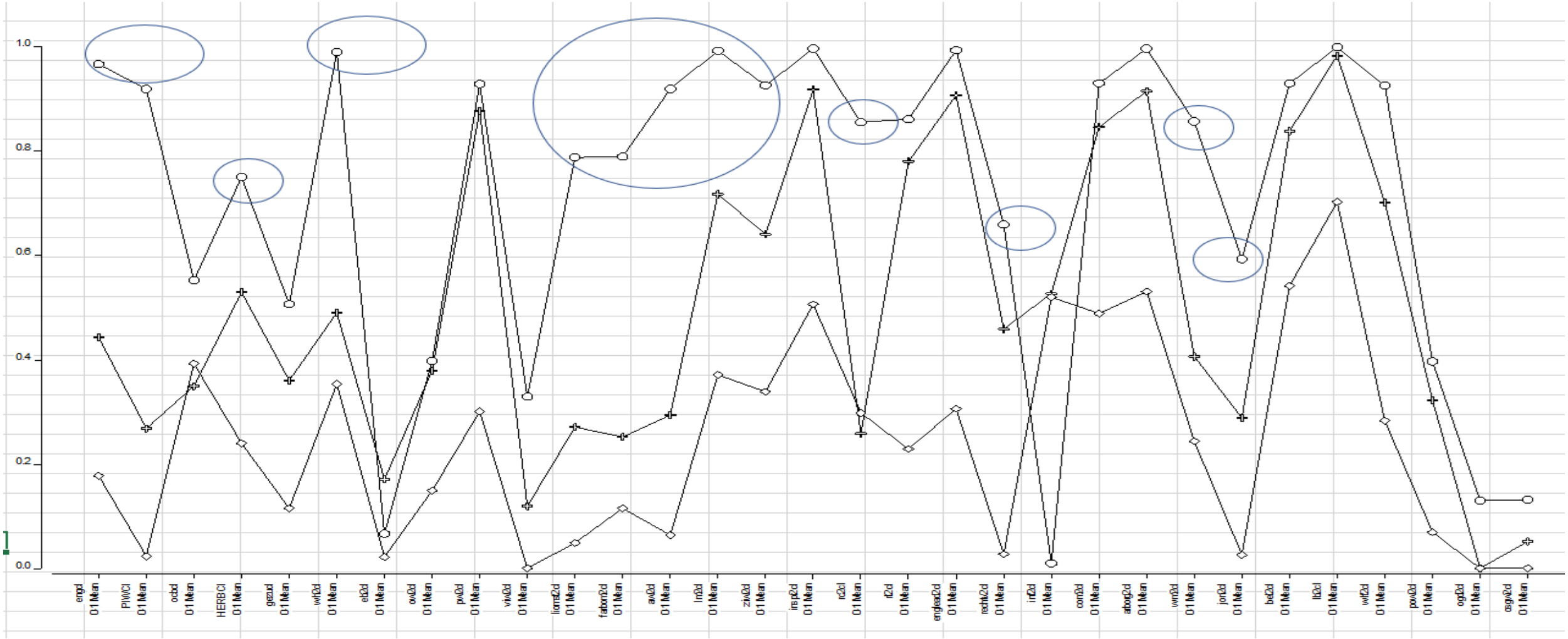
- Assessing fit of models in LCA is difficult (Nagelkerke, 2018). But here Bayesian Information Criterion was as in the textbook examples.
- I sampled two organizations to illustrate the usefulness of this approach: a banking sample (n=1433) and a shoe retail company (n= 126).

Bank	LL	BIC(LL)	Npar	L^2	df	p-value	Class.Err.
1-Cluster	-32188.1	64812.33	60	43547.55	1373	1.8e-8131	0
2-Cluster	-30221.1	61030.91	81	39613.52	1352	9.0e-7321	0.0502
3-Cluster	-29719.1	60179.55	102	38609.53	1331	1.3e-7125	0.081
4-Cluster	-29475.6	59845.08	123	38122.45	1310	7.6e-7039	0.1212
5-Cluster	-29316.4	59679.29	144	37804.03	1289	1.9e-6987	0.1437
6-Cluster	-29201.7	59602.6	165	37574.73	1268	8.8e-6955	0.1643
7-Cluster	-29096.4	59544.66	186	37364.17	1247	4.5e-6926	0.1743
8-Cluster	-29006.1	59516.62	207	37183.51	1226	1.1e-6903	0.1758
9-Cluster	-28932.8	59522.67	228	37036.95	1205	1.7e-6888	0.1624

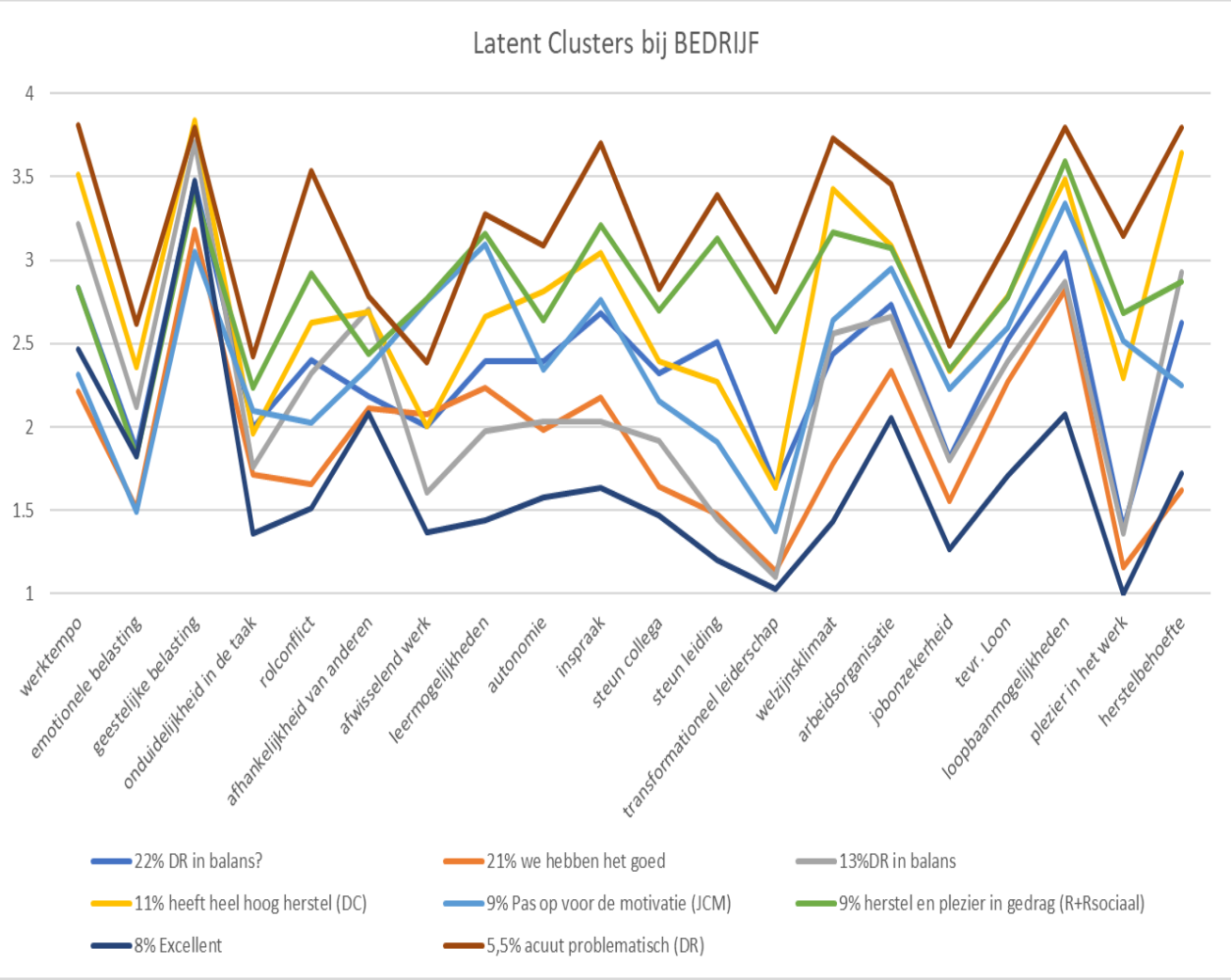
SHOE	LL	BIC(LL)	Npar	L^2	df	p-value	Class.Err.
1-Cluster	-2439.12	5074.529	41	3729.244	79	4.2e-730	0
2-Cluster	-2196.29	4742.058	73	3243.573	47	1.5e-654	0.028
3-Cluster	-2101.14	4704.97	105	3053.285	15	2.6e-646	0.0176
4-Cluster	-2049.96	4755.799	137	2950.915	-17	.	0.0361

- In all cases bootstrap of L^2 was not significant → fit with data

Shoe : 11% in an energy draining job



Bank



- 22% DR in balance
- 11% high recovery need (Demand-Control)
- 8% excellent
- 21% we are well off
- 9% careful motivation at risk (job characteristics)
- Acute problematic (DR)
- 13% DR in balance
- 9% recovery need and job satisfaction → Resources , especially the social ones.

Summary-Discussion

- This inductive approach, Latent profiling results in content-rich profiles that may align with existing theoretical frameworks → start for developing interventions
- These latent profiles also allow to give individual feedback to respondents as the classification probabilities for each participant are known
- The door to interventions are often groups / departments but the profiles are rarely strongly associated with these entitities-> consequence for program and process theory of interventions?