# Introduction

- Early symptom reduction → better treatment outcome (Solmi et al., 2023)
- Depression is heterogenous (Freid & Nesse, 2015)
- Reduction in *specific symptoms* → better outcome?
- Limited evidence for specific treatment components (Cuijpers et al., 2019)
- No treatment stands out as gold standard (Cuijpers et al., 2021)

The network theory of mental disorders

- Symptoms *causally* affect each other → disorders
- Treatment = manipulating the symptom networks
- Changing **central symptoms** will have larger effects on other symptoms
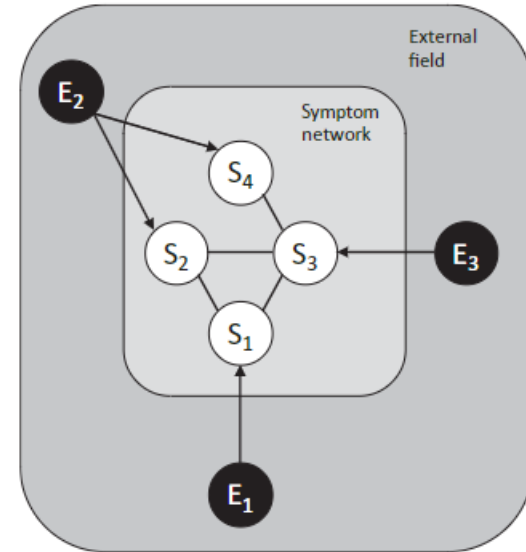
(Borsboom, 2017)

Symptom networks for depression

- Mostly cross-sectional studies
- Central symptoms in depression (according to NWA studies):
1. mood
2. anhedonia
3. energy loss
4. concentration problems
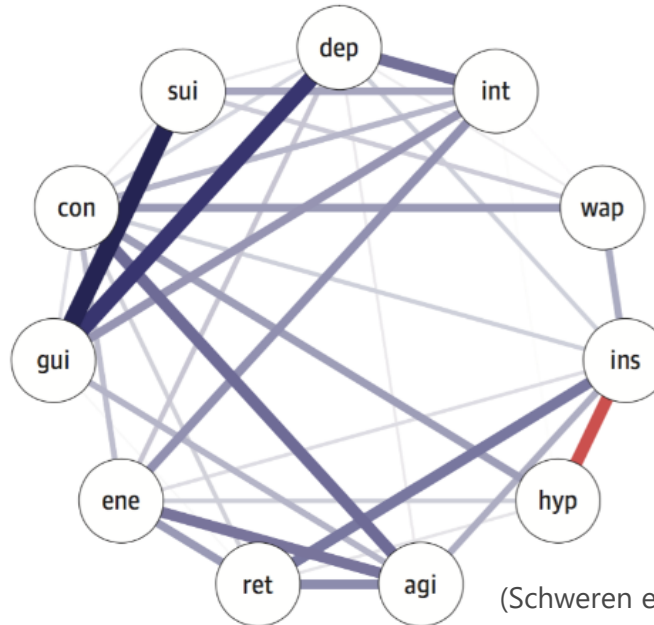
(Schweren et al., 2018)

Aims

1. Determine the impact of early change in specific depression symptoms during the first four weeks of ICBT on overall depression severity at post-treatment
2. Explore the impact of early change in each depression symptom on symptom-specific levels at post-treatment (i.e. cross-lagged network analysis)

Hypothesis: Stronger associations for hallmark symptoms (mood and emotional involvement (anhedonia)

Methods

- **Participants:** Individuals treated with ICBT for depression in the MULTI-PSYCH cohort (n=1300)
- **Design:** Cohort with three time-points (PreT, week 4 and PostT)
- **Exposures:** Specific symptoms at week 4 (MADRS-S)
- **Outcomes:**
  1. Full-scale MADRS-S at PostT (overall depression)
  2. Specific symptoms at PostT (symp)

PreT   Week 4   PostT (w 12)

MULTI-PSYCH COHORT

Analyses

- **Assumption:** Symptoms vary and affect each other over time
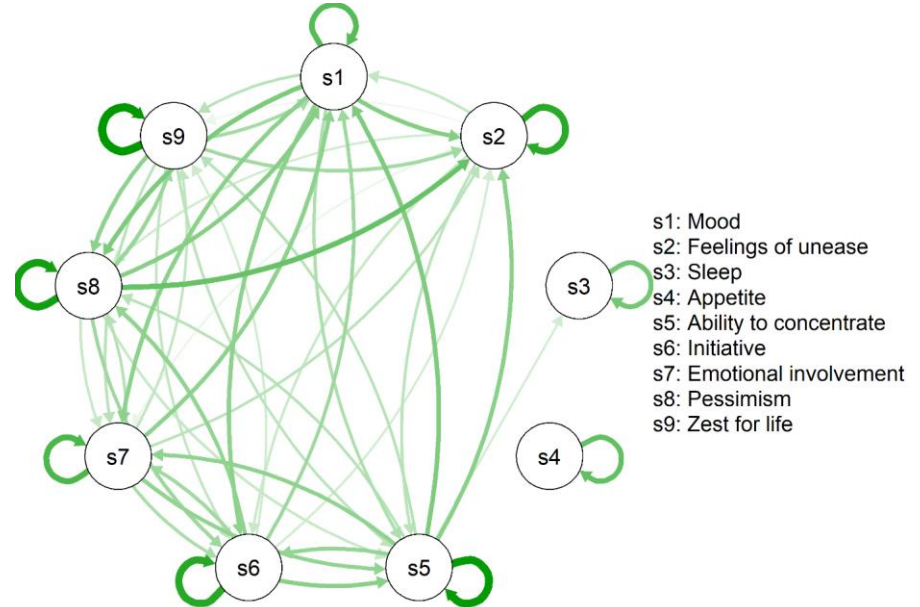- **Statistical methods:** Linear regressions with W4 symptoms as exposures
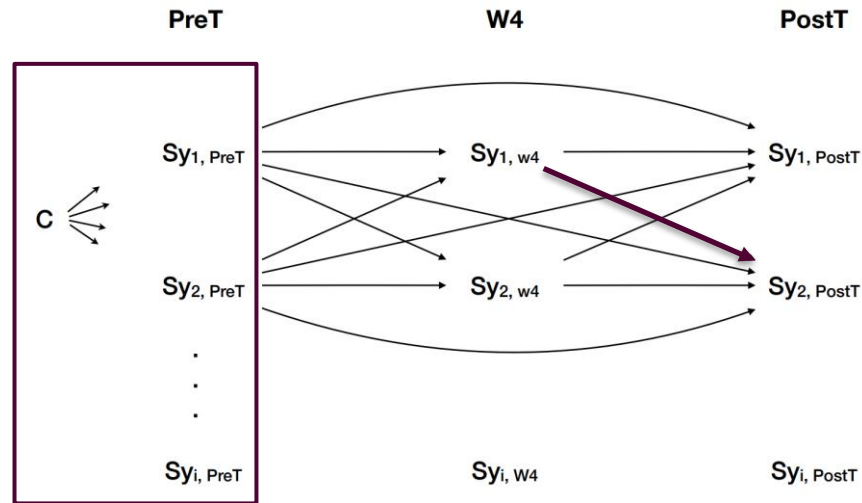
Results

Overall depression at PostT

Symptom-specific change (PreT-W4) - associations with overall depression levels at post-treatment	
Symptom	**Standardized beta (95% CI) [a]**
Mood	0.44 (0.38-0.51)
Feelings of unease	0.39 (0.32-0.46)
Sleep	0.27 (0.19-0.36) [b,c]
Appetite	0.27 (0.2-0.34) [b,c]
Ability to concentrate	0.46 (0.39-0.53)
Initiative	0.43 (0.36-0.49)
Emotional involvement (Anhedonia)	0.42 (0.36-0.49)
Pessimism	0.44 (0.37-0.52)
Zest for life	0.42 (0.35-0.5)
[a] Adjusted for pre-treatment levels of: all nine individual MADRS-S symptoms, age, sex, education level, disposable income, unemployment, sick-leave, psychiatric comorbidity, prior MDD episodes, anti-depressant medication, psychiatric in-patient care, suicide attempts, version of ICBT protocol, alcohol risk score and insomnia severity.	

Symptom–specific depression PostT

s1: Mood
s2: Feelings of unease
s3: Sleep
s4: Appetite
s5: Ability to concentrate
s6: Initiative
s7: Emotional involvement
s8: Pessimism
s9: Zest for life

Discussion – All roads lead to Rome

- Similar associations across W4 symptoms with later depression levels
- Conceptual dovetailing of treatment research findings
- **Excepetions:** sleep and appetite
- **Treatment implications:** no symptom seem to be a better treatment target than any other (again, except for sleep and appetite)
- Due to diagnostic heterogeneity?

Strengths and limitations

- Large naturalistic sample
- Longitudinal FU
- Control for prior symptom-levels

- Observational
- Time-frame (days, hours, weeks)?
- Excludes severe depression
- Overlapping estimates?

Published paper