Slide 1

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Urban Mental Health:
from complexity to action

prof. dr. Reinout Wiers, co-director,

with prof. dr. Claudi Bockting
Centre for Urban Mental Health, University of Amsterdam

Centre for Urban Mental Health

Slide 2

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Waarom UMH?

- Steeds meer mensen wonen in de stad
- Nu al meer dan de helft van de mensen wereldwijd; 2/3 tegen 2050
- (Economisch) attractief, maar ook uitdagend en stressvol (blijkt ook uit modellen)
- *Urban Stress* beïnvloedt mentale gezondheid

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URGENCY: GBD STUDY, 2021/22

2019: 970 miljoen people (1/8) met mentale stoornis

Angst, depressie, verslaving meest voorkomend

> 25% toename tijdens COVID (angst, depressie, verslaving meer gemengd beeld)
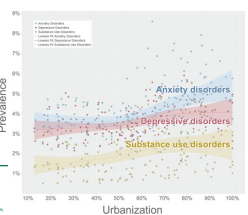
Slide 4

URBANICITY: A SOCIETAL CHALLENGE

Data UN/WHO (2017)
Niet-lineare positieve correlatie,

Meer mentale problemen en stoornissen als percentage mensen dat in stad woont toeneemt, vooral boven 50%

UMH: Underlying mechanisms?

Advancing urban mental health research: from complexity science to actionable targets for intervention

Junus M. van der Wal, Claudia D van Borkulo, Marie K Deserno, Josefien JF Breedvelt, Mike Lees, John C Lokman, Denny Borsboom, Damiaan Denys, Ruth J van Holst, Marten P Smidt, Karen Stronks, Paul J Lucassen, Julia C Wit van Weert, Peter M A Sloot, Claudi L Bockting*, Reinout W Wiers*

van der Wal et al, Lancet Psychiatry, 2021

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Waarom complexiteit benadering?

- Urban mental health complex systeem
- Samenspel tussen individuele emotioneel-cognitieve factoren (en fysiologie) en omgevingsfactoren
- Veranderen over de tijd
- Ook als gevolg van symptomen, feedback loops
- Symptomen kunnen elkaar beïnvloeden (netwerk benadering psychopathologie)

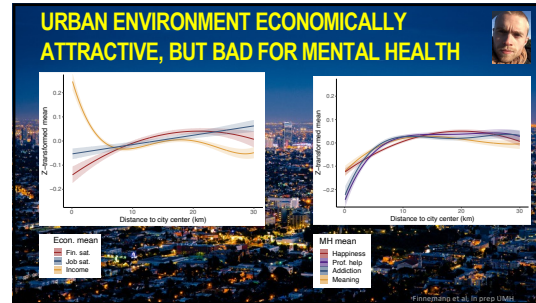Centre for Urban Mental Health

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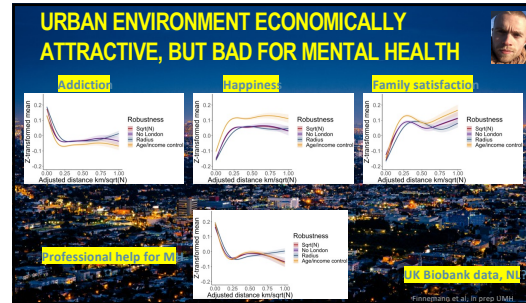
Complexiteit omarmen

- Technologie helpt om mentale gezondheid intensief te meten Interdisciplinair onderzoek (UMH samenwerking 3 faculteiten: wis & natuurkunde, geneeskunde, sociale en gedragswetenschappen)
- Nieuwe modelleer-benaderingen om complexe systemen in kaart te brengen
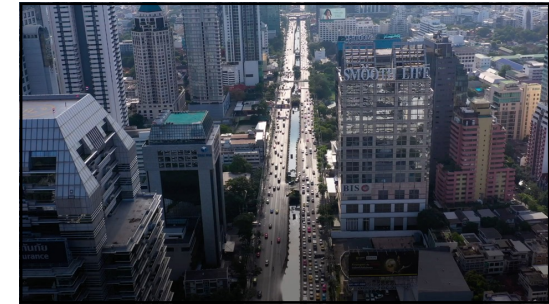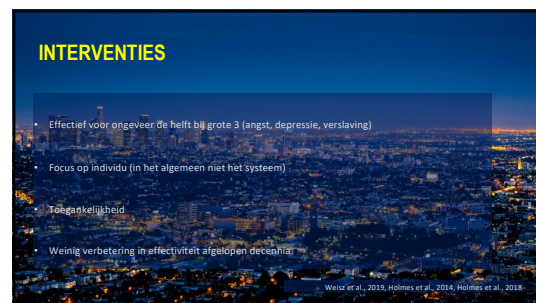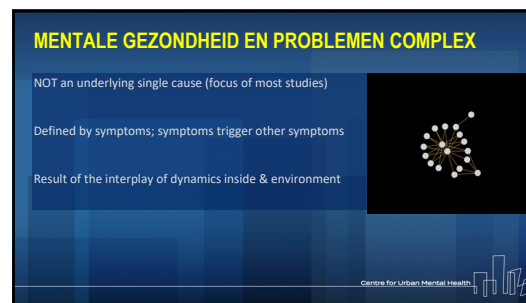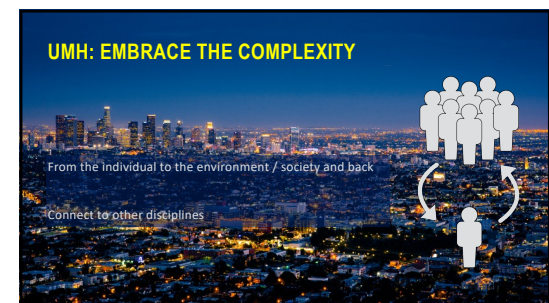- Samen met het Institute for Advanced Studies (IAS) UvA

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URBAN ENVIRONMENT ECONOMICALLY ATTRACTIVE, BUT BAD FOR MENTAL HEALTH

Z-transformed mean — Distance to city center (km)

Econ. mean
- Fin. sat.
- Job sat.
- Income

MH mean
- Happiness
- Prof. help
- Addiction
- Meaning

Finnemann et al, in prep UMH

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URBAN ENVIRONMENT ECONOMICALLY ATTRACTIVE, BUT BAD FOR MENTAL HEALTH

Addiction   Happiness   Family satisfaction

Robustness
- Sqrt(N)
- No London
- Radius
- Age/income control

Adjusted distance km/sqrt(N)

Professional help for MH

UK Biobank data, NL

Finnemann et al, in prep UMH

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INTERVENTIES

- Effectief voor ongeveer de helft bij grote 3 (angst, depressie, verslaving)
- Focus op individu (in het algemeen niet het systeem)
- Toegankelijkheid
- Weinig verbetering in effectiviteit afgelopen decennia

Weisz et al., 2019, Holmes et al., 2014, Holmes et al., 2018

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MENTALE GEZONDHEID EN PROBLEMEN COMPLEX

NOT an underlying single cause (focus of most studies)

Defined by symptoms; symptoms trigger other symptoms

Result of the interplay of dynamics inside & environment

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UMH: EMBRACE THE COMPLEXITY

From the individual to the environment / society and back
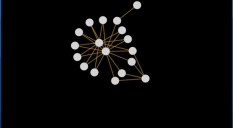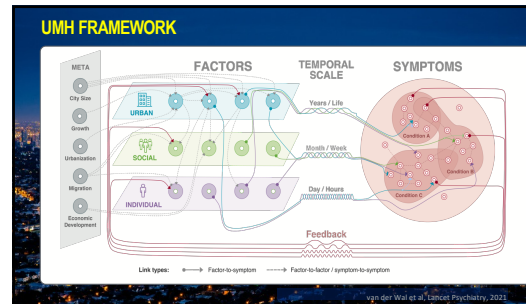
Connect to other disciplines

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MENTAL HEALTH CONDITIONS AS COMPLEX SYSTEMS

- To explain comorbidity in mental health
  (e.g., Borsboom, Cramer, Fried, Bringmann)

- To explain effects of (urban) stress on mental health
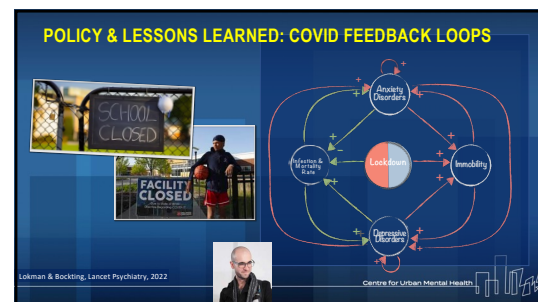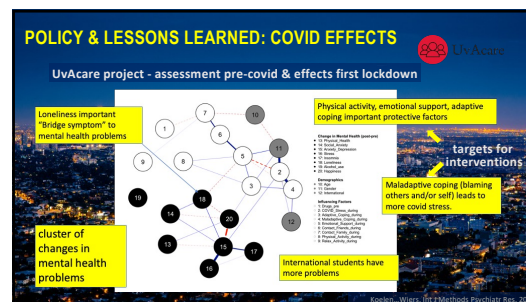
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UMH FRAMEWORK

van der Wal et al, Lancet Psychiatry, 2021

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TARGETS ON SOCIETAL LEVEL?

MACRO

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POLICY & LESSONS LEARNED: COVID FEEDBACK LOOPS

Lokman & Bockting, Lancet Psychiatry, 2022

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POLICY & LESSONS LEARNED: COVID EFFECTS

UvAcare project - assessment pre-covid & effects first lockdown

Loneliness important "Bridge symptom" to mental health problems

Physical activity, emotional support, adaptive coping important protective factors

targets for interventions

Maladaptive coping (blaming others and/or self) leads to more covid stress.

cluster of changes in mental health problems

International students have more problems

Koelen...Wiers, Int J Methods Psychiatr Res, 2021

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TARGETS ON GROUP LEVEL?

MESO

Braedvelt et al, BJP Open, 2022

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WHERE IS THE OPTIMAL TARGET POINT(S)?

Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults
A Cluster Randomized Trial

Breedvelt et al., BJP Open, 2022

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FAMILY CHECK-UP PROJECT

- *Aim:* How do parenting interventions work in urban low SES context and how can they be optimized?

- *Methods:* Meta-analytic study of intervention effects (ongoing)
- Empirical studies using EMA data to assess FCU effects in individual (low SES) families (pilot started)
- Cross-sectional study to assess to what extent parenting behavior is related to the neighborhood context (ongoing)
- Home assessment, video feedback, assess wider effects in neighborhood

- *Preliminary findings:* urban factors negatively influence parenting behavior.
- The Family Check-Up seems effective in improving child problem behavior and parenting practices.

Team: dr. Loes van Rijn-van Gelderen, dr. Brechtje de Mooij, prof. dr. Geertjan Overbeek

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INDIVIDUAL MODELS AND PERSONALISATION
STAYFINE study in young (13-21 y)

Diagnosis   Online Questionnaires

Individual Networks

Personalized Intervention

6/8 modules by individual choice

Information   Cognitive Restructuring
Exposure   Positive Affect
Wellness   Sleep

Robberegt et al., BMJ Open, in press

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USING PERSONALIZED NETWORKS IN TREATMENT

Psychological Methods

Investigating the Feasibility of Idiographic Network Models

Simulation study on data needed to estimate individual networks (a lot!)
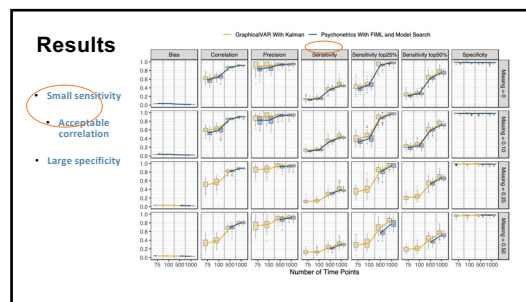
Possible solution: include (sub)group information

Now pilot using it in addiction treatment in urban setting

See also large gravitation project "New Science of Mental Disorders" nsmd.eu

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Results

GraphicalVAR With Kalman   Psychonetrics With FIML and Model Search

- Small sensitivity
- Acceptable correlation
- Large specificity

Bias | Correlation | Precision | Sensitivity | Sensitivity top25% | Sensitivity top50% | Specificity

Number of Time Points

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Application development

- We developed an application where clinicians can explore the ESM data of their patients and print resulting graphs to discuss with clients.

- The application allows to:
  - Explore trends of different variables over time
  - Explore histograms of substance use occasions in different locations and with different people
  - Estimate multiple networks investigating different constructs that can influence substance use including a maximum of 6 variables at a time

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Pilot case study: cannabis use disorder

Mansueto, A. C., Wiers, R. W., van Weert, J., Epskamp, S., & Schouten, D. C. (manuscript in preparation). Personalized Ecological Momentary Assessment and Feedback for Cannabis Use Disorder: Application Development and Proof-of-Principle Case Study.

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The procedure

1. Client chose personalized ESM items
2. Collected data 5 times per day for three weeks
3. Researcher and practitioner met to explore ESM data using application
4. Graphs considered useful for session were selected
5. These were printed and discussed with client in intervention session

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ESM items

- Mandatory: substance use, craving, anxious, depressed, angry, happy, relaxed, where, with whom
  - Personalized: choose at least one in each category (Emotions, Cognitions, Behaviors, Physical symptoms, Positivity, Self-written item)

Examples:
"In the past three hours, how much urge to consume cannabis did you feel? "
"In the past three hours, how much time did you spend working or studying?"
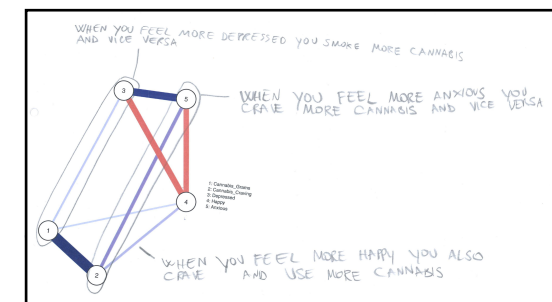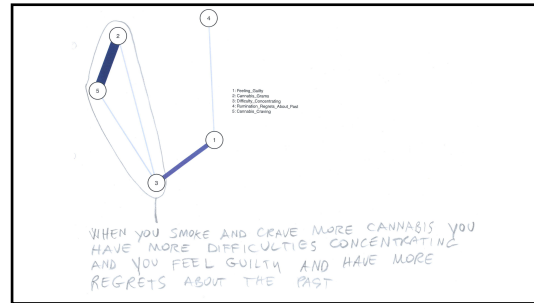"Where were you, specifically, when you consumed cannabis? Select all locations that apply."

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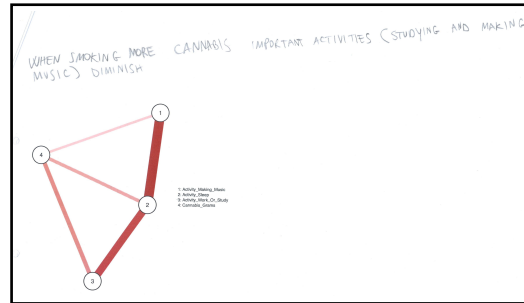---
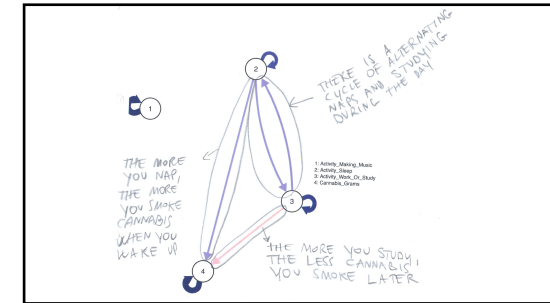

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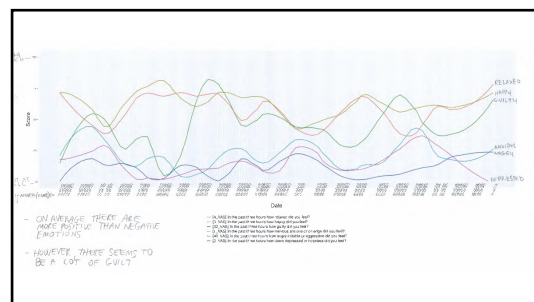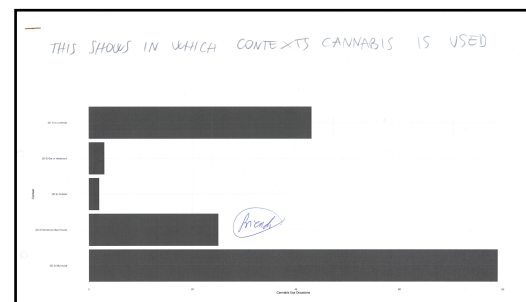
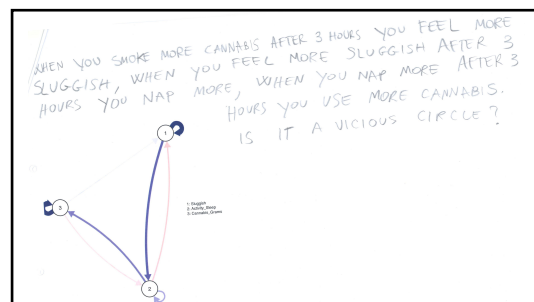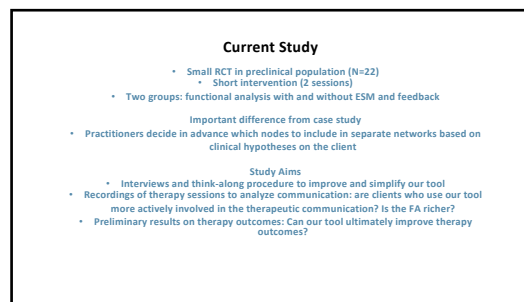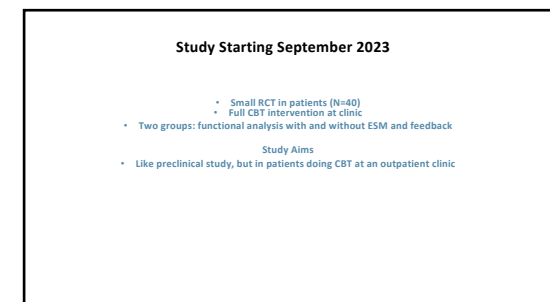**Current Study**

- Small RCT in preclinical population (N=22)
- Short intervention (2 sessions)
- Two groups: functional analysis with and without ESM and feedback

Important difference from case study
- Practitioners decide in advance which nodes to include in separate networks based on clinical hypotheses on the client

Study Aims
- Interviews and think-along procedure to improve and simplify our tool
- Recordings of therapy sessions to analyze communication: are clients who use our tool more actively involved in the therapeutic communication? Is the FA richer?
- Preliminary results on therapy outcomes: Can our tool ultimately improve therapy outcomes?

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Study Starting September 2023

- Small RCT in patients (N=40)
- Full CBT intervention at clinic
- Two groups: functional analysis with and without ESM and feedback

Study Aims
- Like preclinical study, but in patients doing CBT at an outpatient clinic

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