

# The human in the uniform



LEPH 2018 - Toronto

« waakzaam en dienstbaar »



Universiteit  
Leiden  
The Netherlands



# What is the goal of this session?

## Reflection on:

- How to investigate resilience?
- How could our research improve police work?

## Background

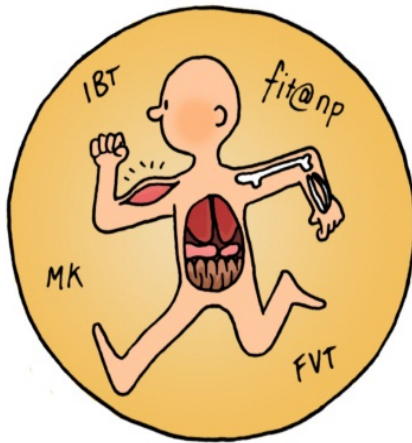
MSc Neurobiology

Lecturer Police Leadership

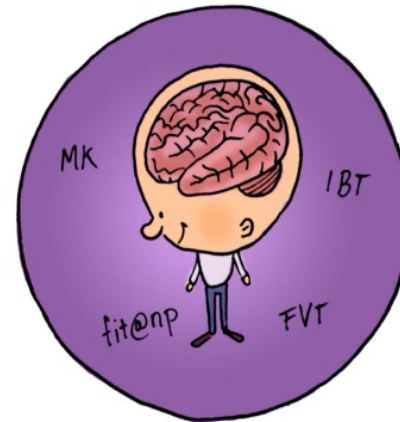
PhD Candidate – neurobiology of resilience

# Resilience individual: three perspectives

*the ability to function successfully under challenging circumstances*



Ability to function:  
*body*  
(physiological)



Functioning under challenging  
circumstances:  
*mind*  
(psychological)



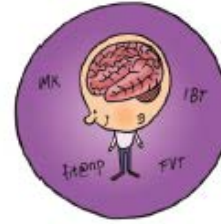
Functioning successfully:  
*spirit*  
(spirituality)

# Human performance

individual



Body



Mind



Soul

group



Team resources



Group dynamic



Team spirit

organisation



Basic facilities



Care and support



System awareness

# Hunting for an explanatory mechanism

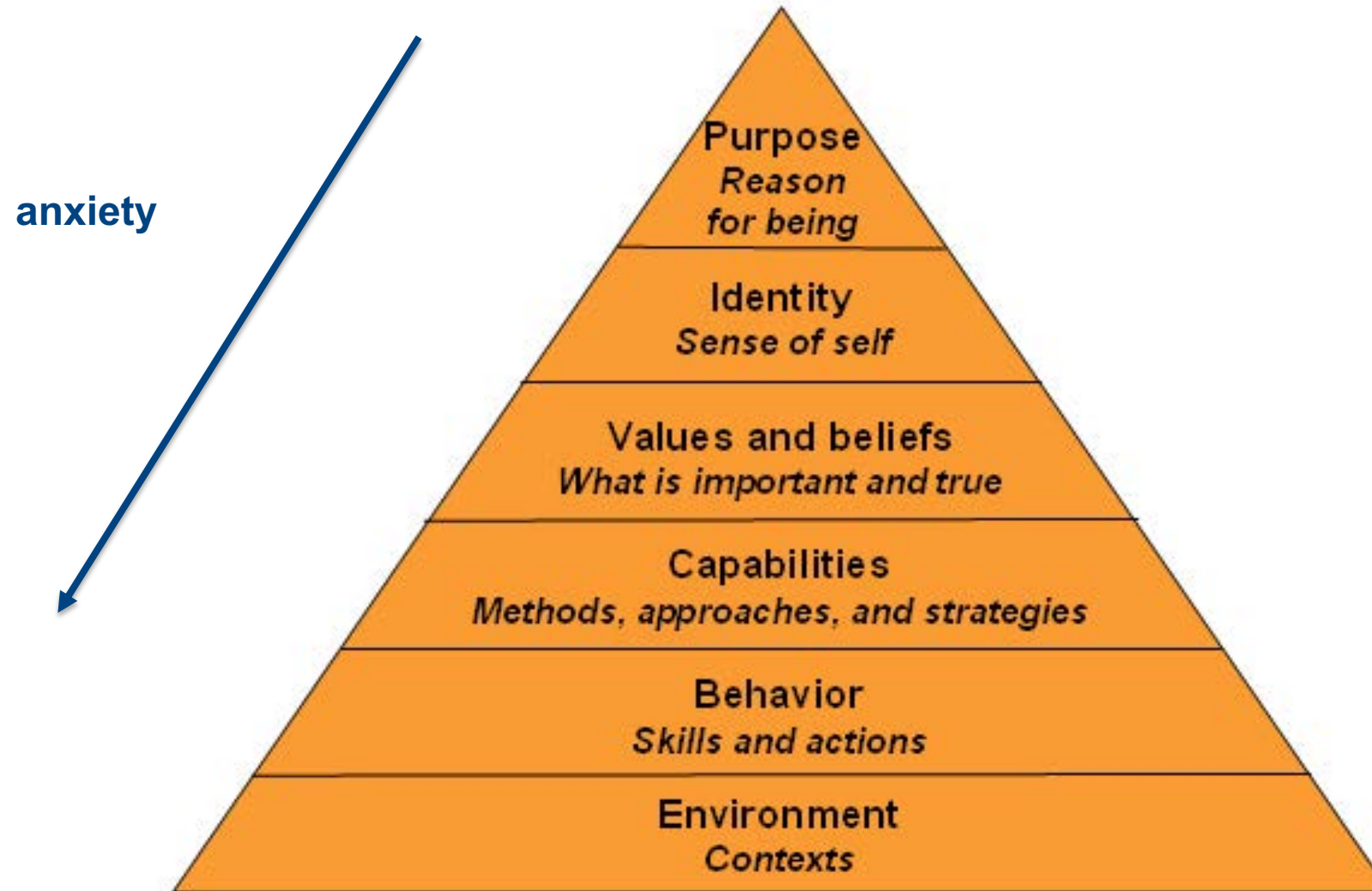
## Homeostasis

- Remaining the same (Cannon, 1929)
- Function integrity of a dynamic, open and composed whole in interaction with a continuously changing context (Smit, 2018)

## In practice:

- Focus on skills
- Instrumental approach
- When confronted with 'the unusual', climate moves from 'identity and meaning' to 'behaviour and skills'.

# Levels of learning (Bateson)



# Examples

1. Training Mental Strength
2. Inspire Resilience Scale
3. Group resilience
4. Moral resilience

Personal challenges:

1. Focus on craftsmanship – not gadgets or pathology
2. Connection between physical, mental and other kind of indicators

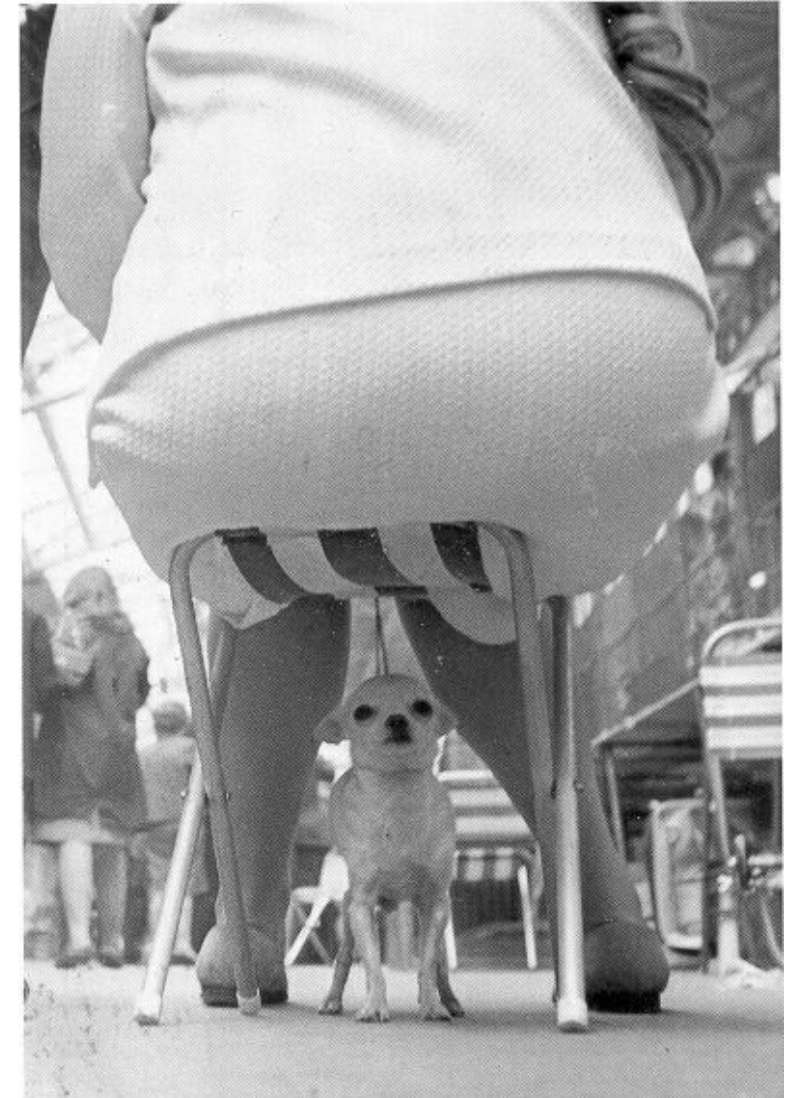


## Key elements of stressor

- Unpredictable
- Uncertainty

'I have had a great many troubles in my life. And most never happened...'

Mark Twain



**...AND YOU THINK YOU HAVE STRESS..**

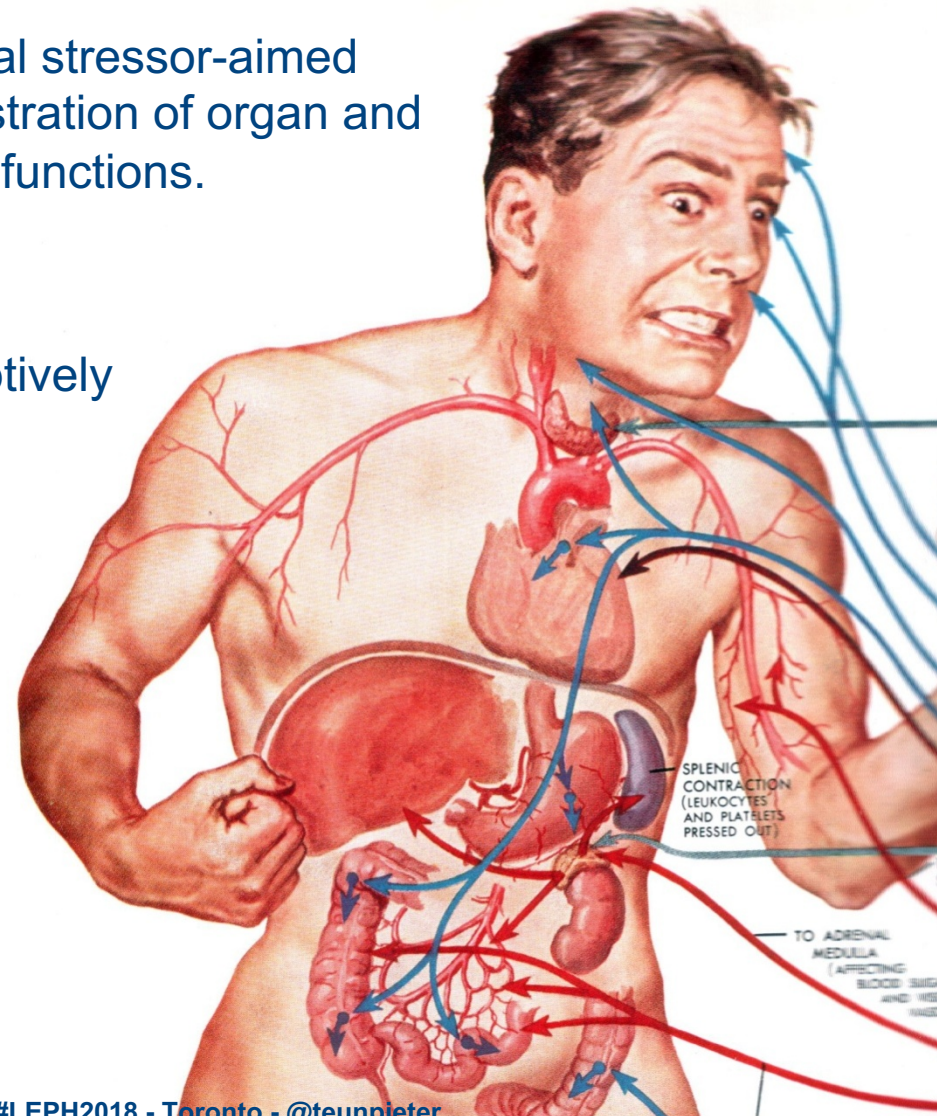


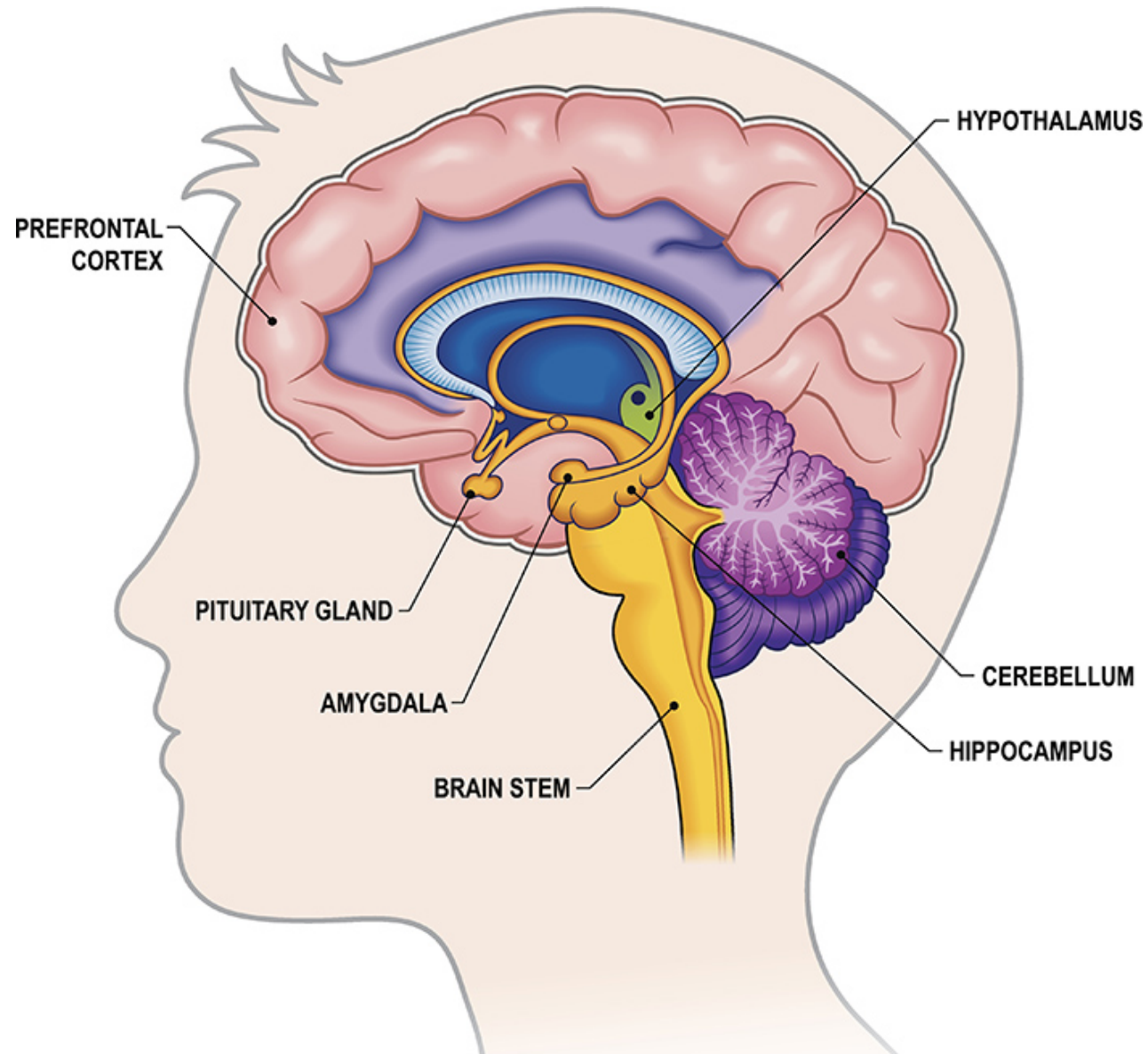
# Acute stress-response en coördination

Optimal stressor-aimed orchestration of organ and tissue functions.

The brain coördinates the different responses.

Goal is to adaptively cope with the stressor.

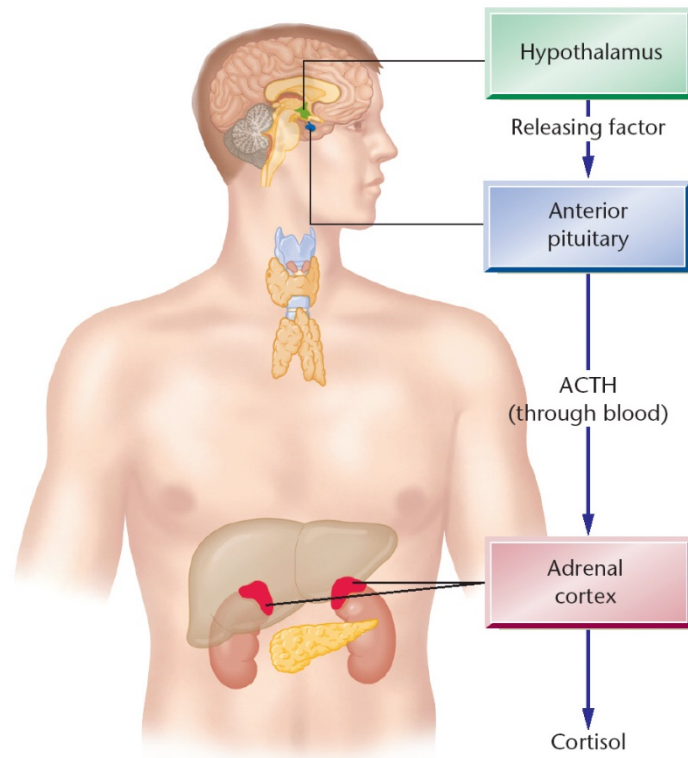




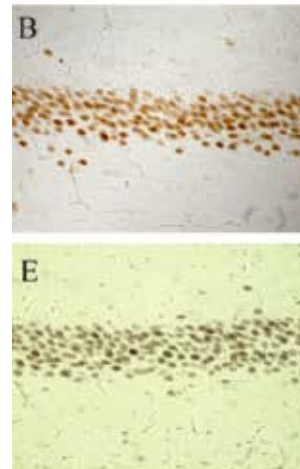
## Next step

1. Self-reported and biological markers of resilience (cross-sectional analysis)
  - Relationship of IRS scores with biological markers of resilience, e.g., MR haplotype and other genotypes
2. Performance of Inspire Resilience Scale as selection aid (longitudinal analysis)
  - Predictive validity of psychological and biological markers of resilience.

# Why biomarkers?



## Corticosteroid receptors / Hippocampus



Mineralocorticoid Receptors

Glucocorticoid receptors

# Why biomarkers?

## Cortisol

### Mineralocorticoid receptor (MR)

- Response selection

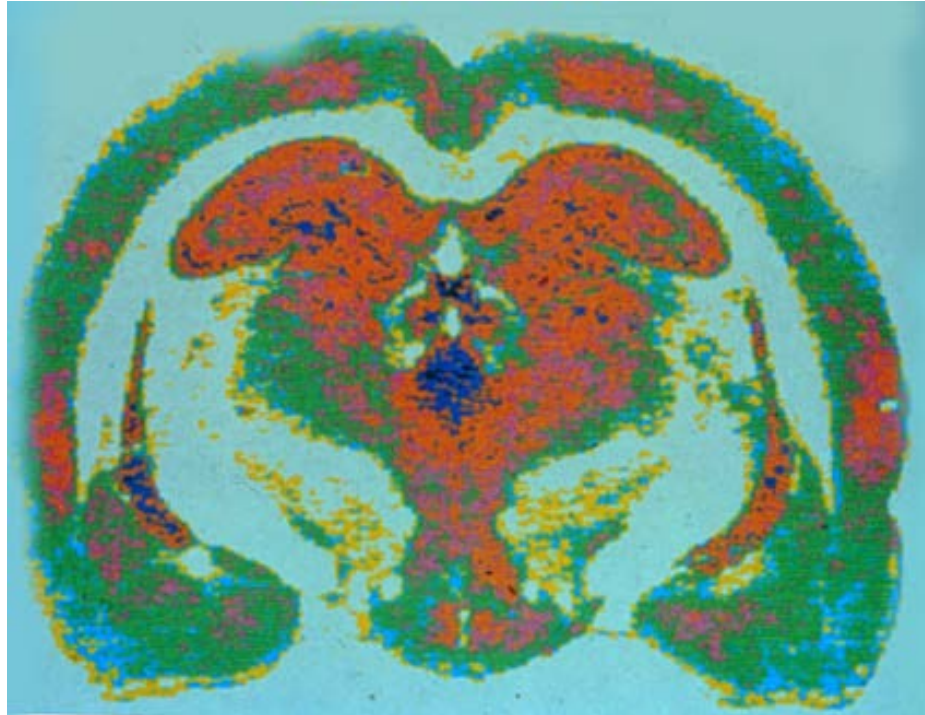
### Glucocorticoid receptor (GR)

- Memory storage
- Preparation future encounters

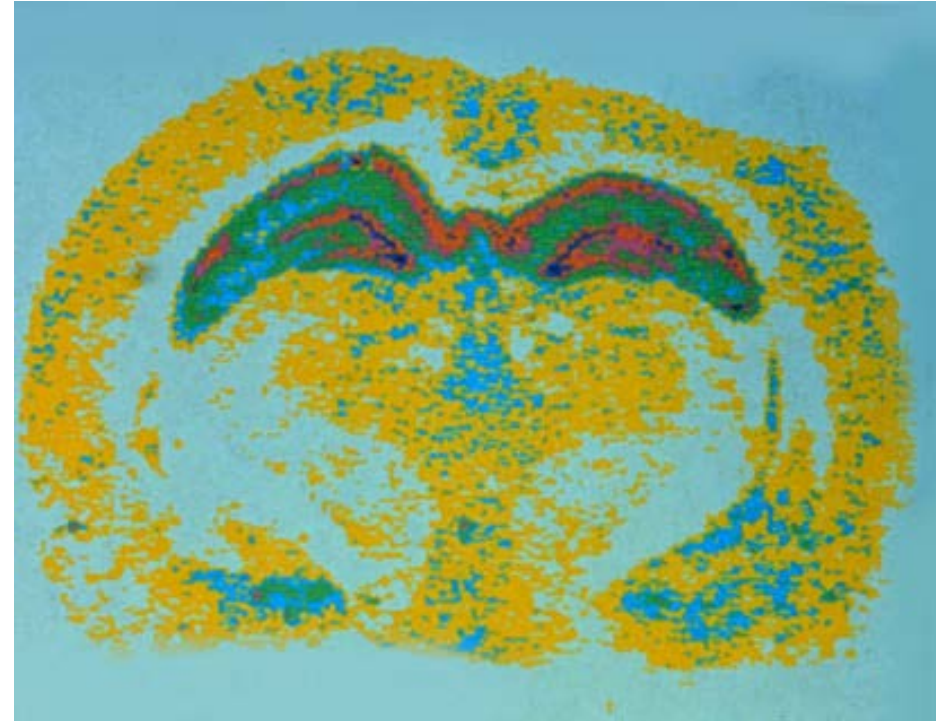
MR and GR need to operate in the right balance to maintain healthy and for optimal resilience.



# Glucocorticoid and mineralocorticoid receptor distribution



GR



MR



# Why biomarkers?

## Decreased MR expression in limbic brain structures

- Chronic stress
- Depression

## Increased MR expression

- Promotion slow wave sleep
- Increased cognitive performance
- Reduced anxiety

# Why biomarkers?

MR-haplotype 2 associated with

- more dynamic cortisol response
- increased optimism
- less rumination
- less burn-out
- less risk for depression

# Questions

# Thank you for your attention!

- ◆ **Resilience Investigated**

On human processes in police work

[www.politieacademie.nl/weerbaarheidonderzocht](http://www.politieacademie.nl/weerbaarheidonderzocht)

- ◆ **Stories of resilience**

Resilience in the practice of police work

[www.politieacademie.nl/veerkrachtigeverhalen](http://www.politieacademie.nl/veerkrachtigeverhalen)

- ◆ **Contact**

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# Further reading

Neuroscience and Biobehavioral Reviews 35 (2011) 1291–1301

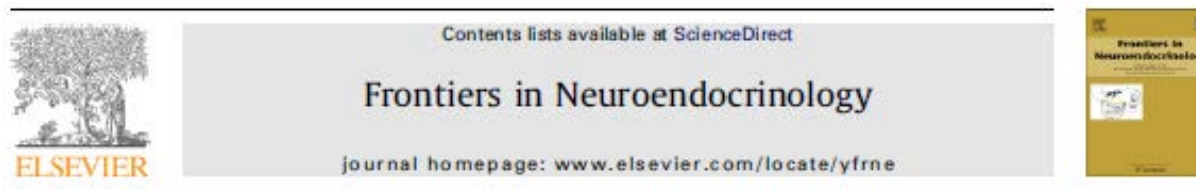


Review

## Stress revisited: A critical evaluation of the stress concept

J.M. Koolhaas<sup>a,\*</sup>, A. Bartolomucci<sup>c</sup>, B. Buwalda<sup>a</sup>, S.F. de Boer<sup>a</sup>, G. Flügge<sup>b</sup>, S.M. Korte<sup>i</sup>,  
P. Meerlo<sup>a</sup>, R. Murison<sup>g</sup>, B. Olivier<sup>i</sup>, P. Palanza<sup>k</sup>, G. Richter-Levin<sup>e</sup>, A. Sgoifo<sup>k</sup>, T. Steimer<sup>j</sup>,  
O. Stiedl<sup>f</sup>, G. van Dijk<sup>h</sup>, M. Wöhr<sup>d</sup>, E. Fuchs<sup>b</sup>

Frontiers in Neuroendocrinology 31 (2010) 307–321



Review

## Neuroendocrinology of coping styles: Towards understanding the biology of individual variation

J.M. Koolhaas<sup>\*</sup>, S.F. de Boer, C.M. Coppens, B. Buwalda

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