



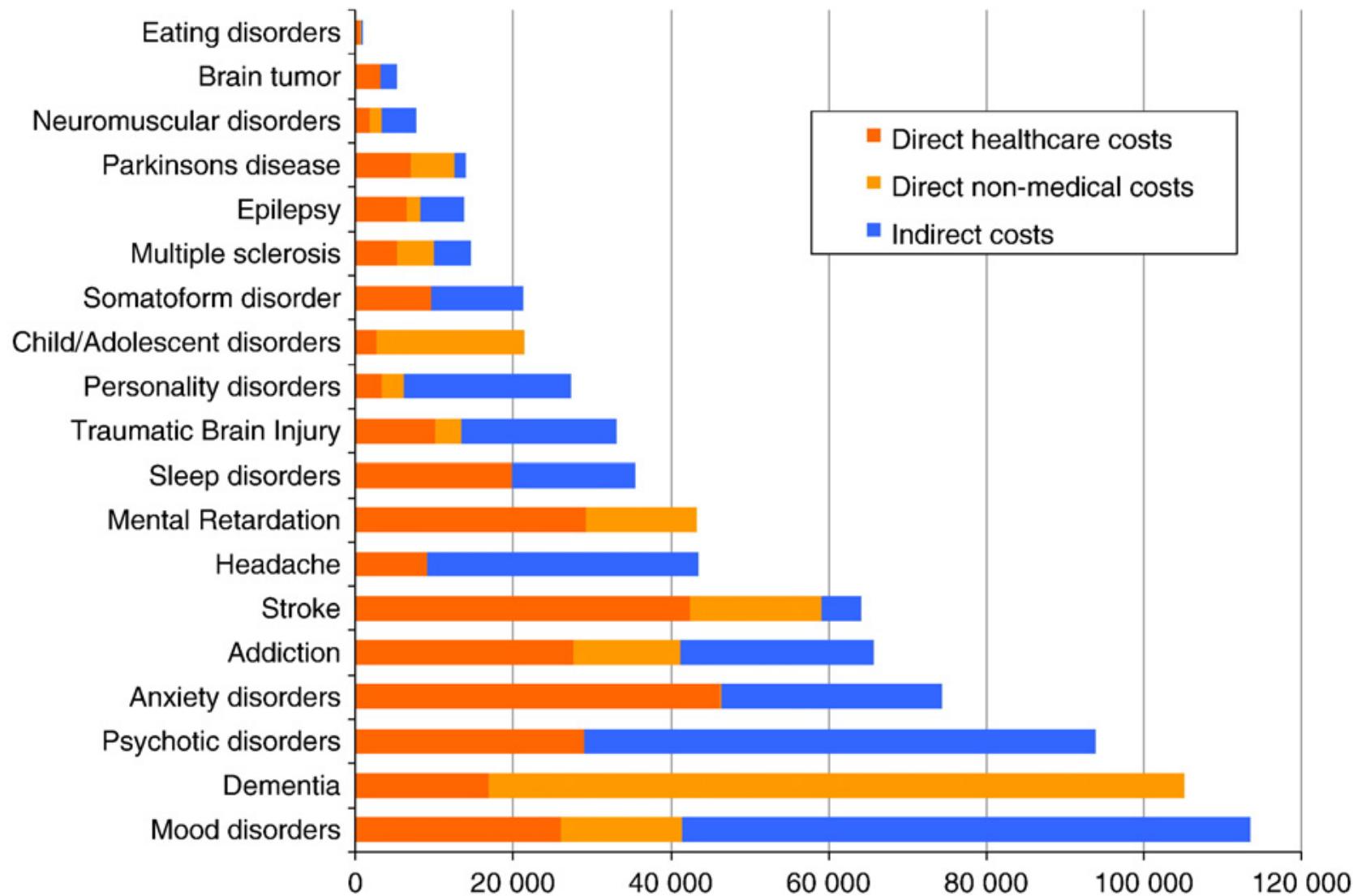
Brain Forum, Lausanne, 5-27-2016

# Social risk for mental illness: brain to prevention

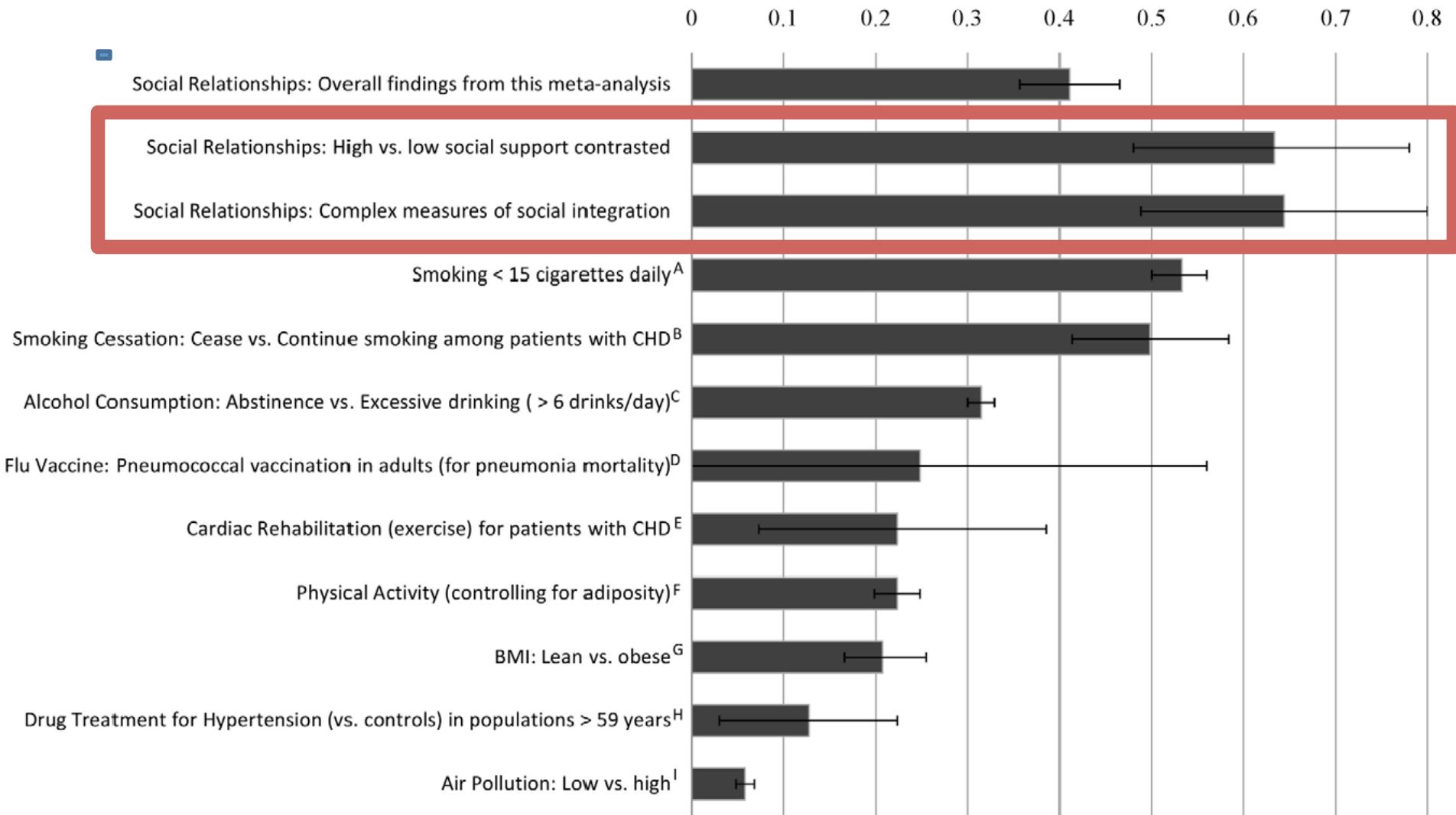
Andreas Meyer-Lindenberg  
Central Institute of Mental Health, Mannheim



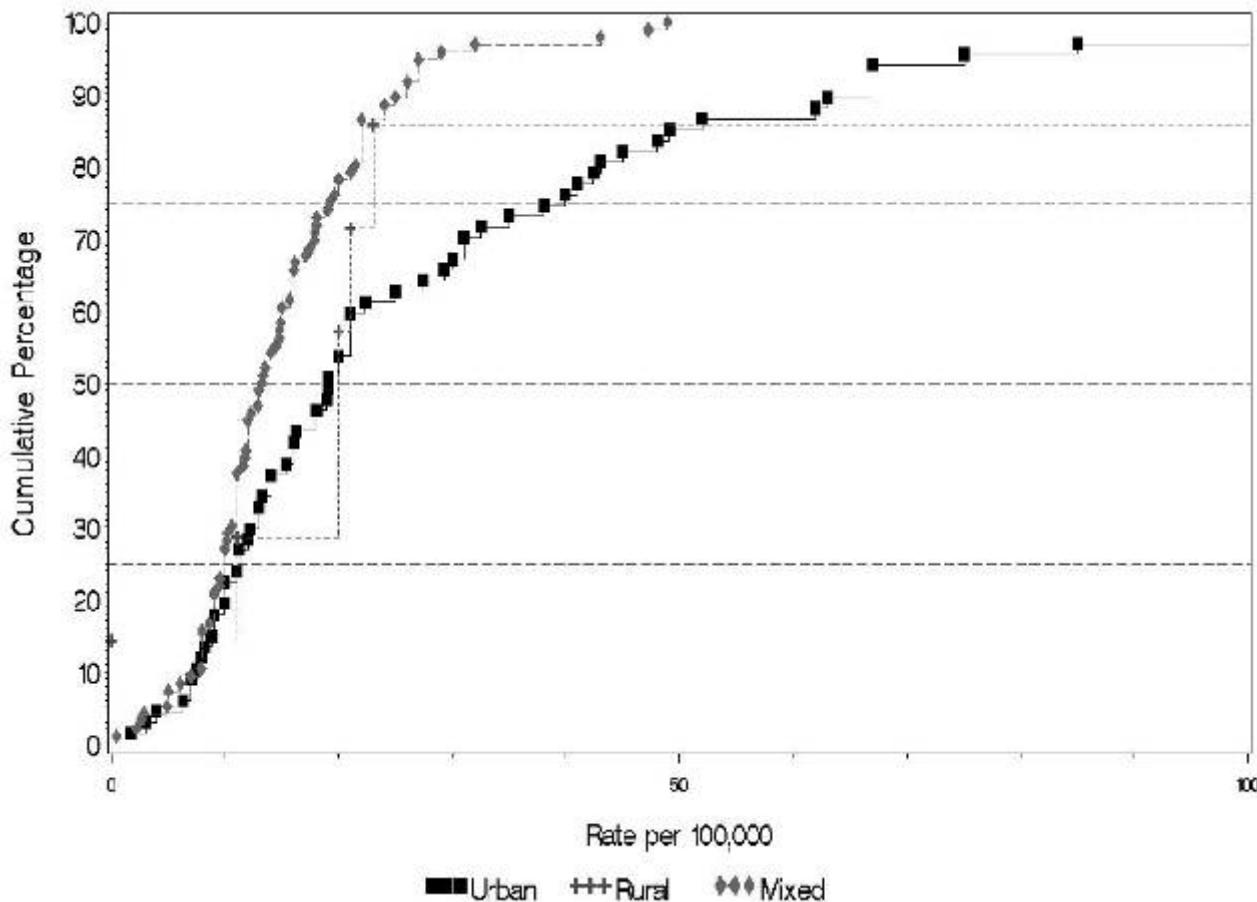
# Estimated cost of brain disorders in Europe 2010 (€ PPP Mio)



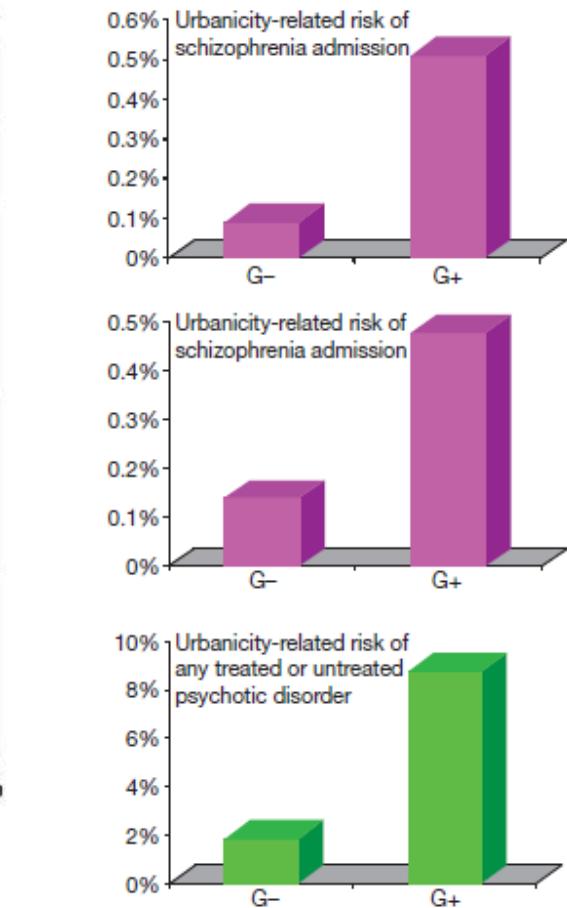
# Social environment and health



# Urbanicity and risk for schizophrenia

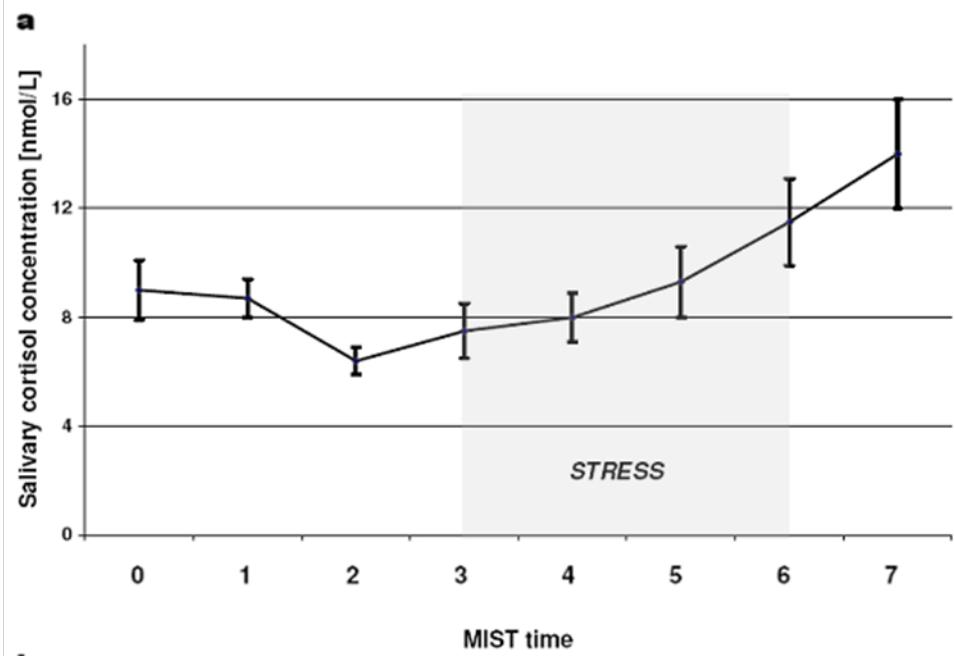
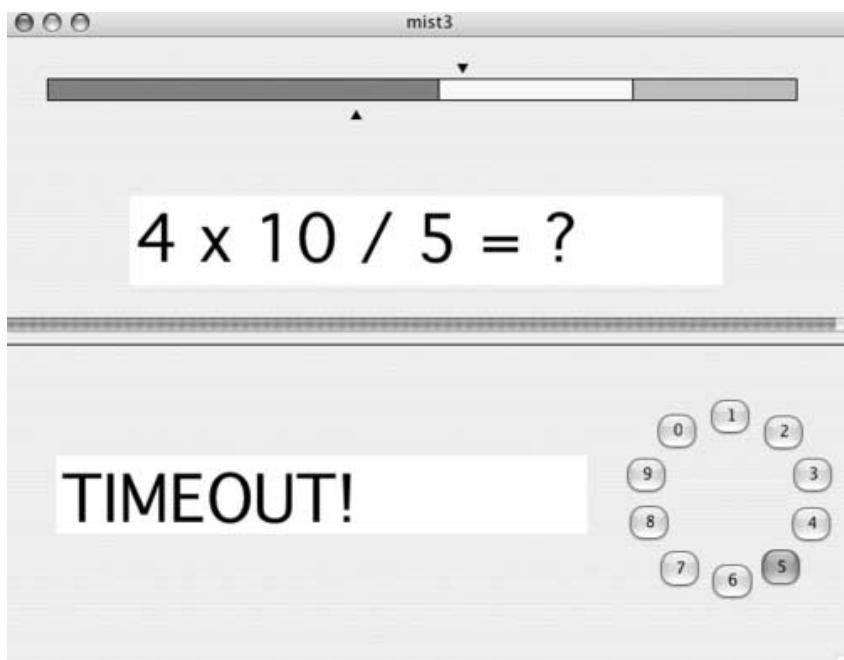


McGrath et al. BMC Medicine 2004



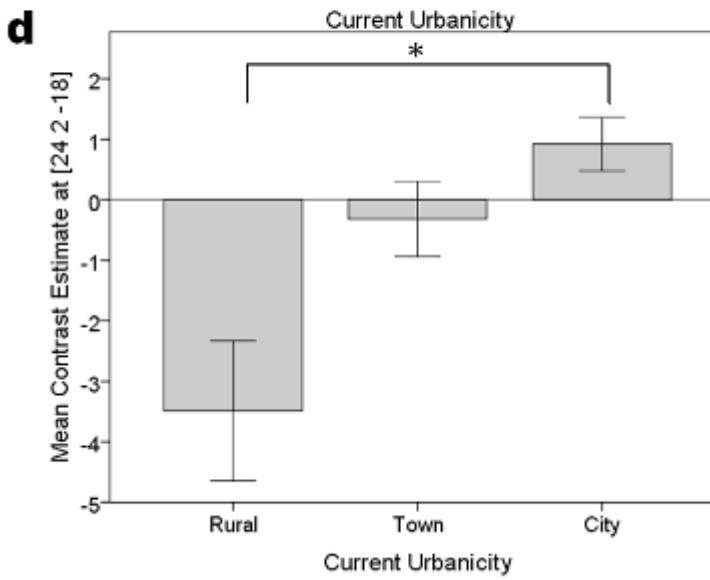
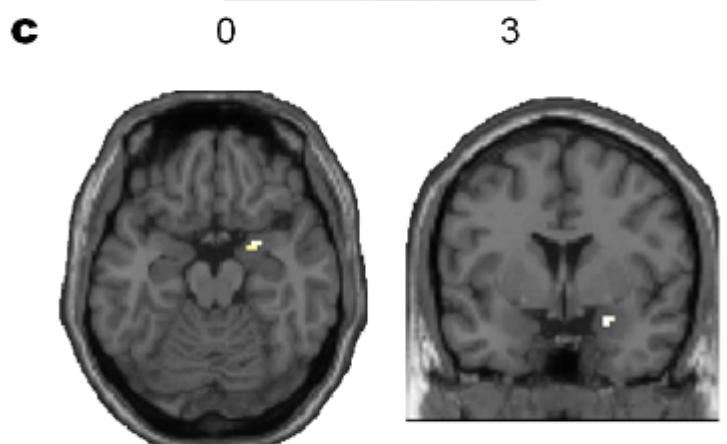
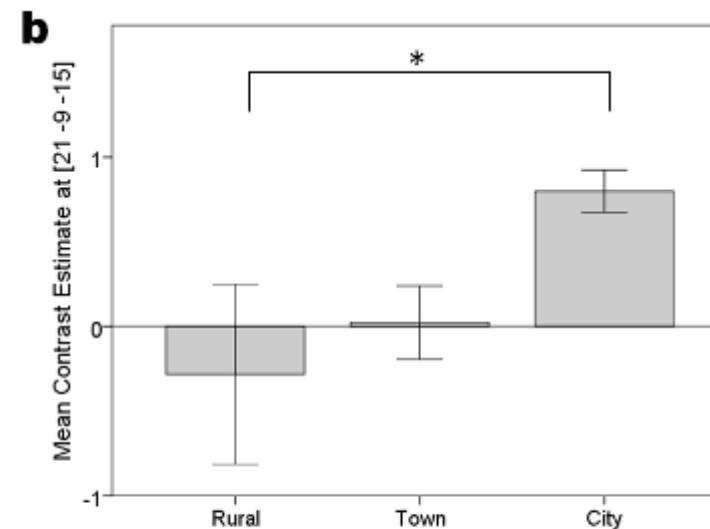
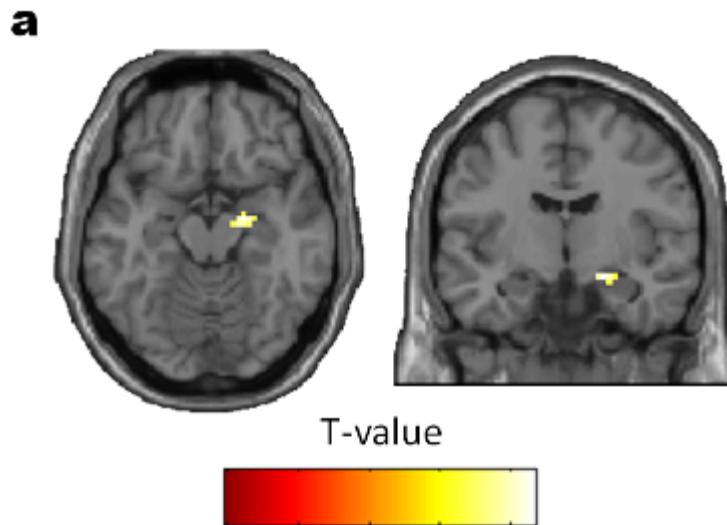
van Os et al. Nature 2010

# Imaging Stress Task



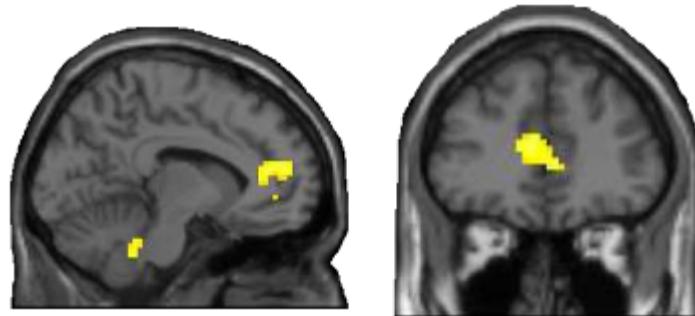
Lederbogen\*, Kirsch\*, Haddad\* et al.,  
Nature 2011

# City living and amygdala activation



# Urban birth tunes cingulate activation during social stress processing

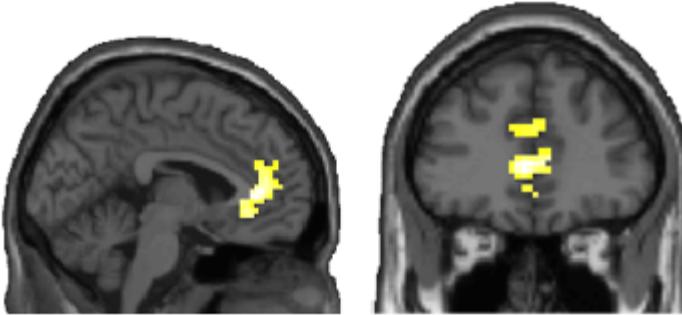
a



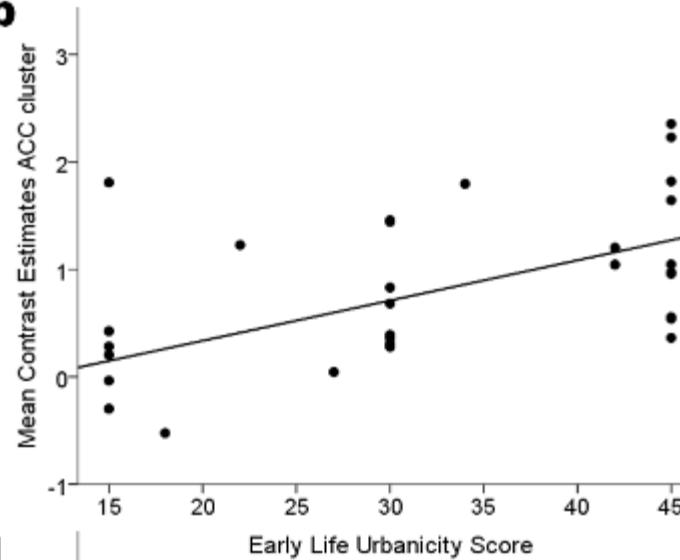
T-value



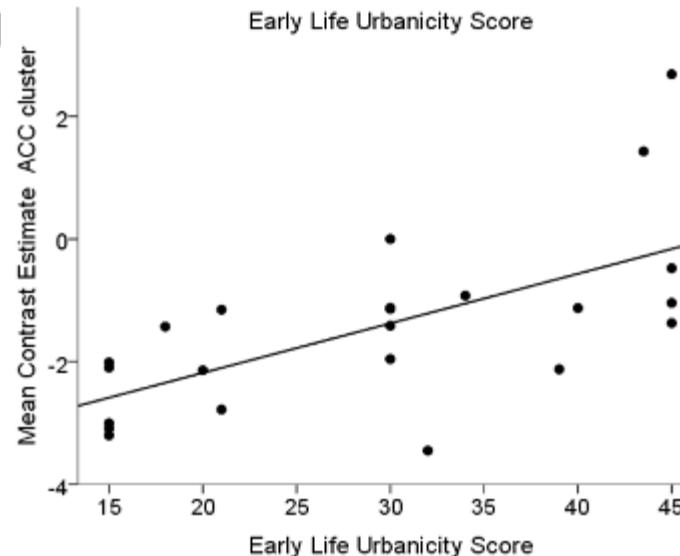
c



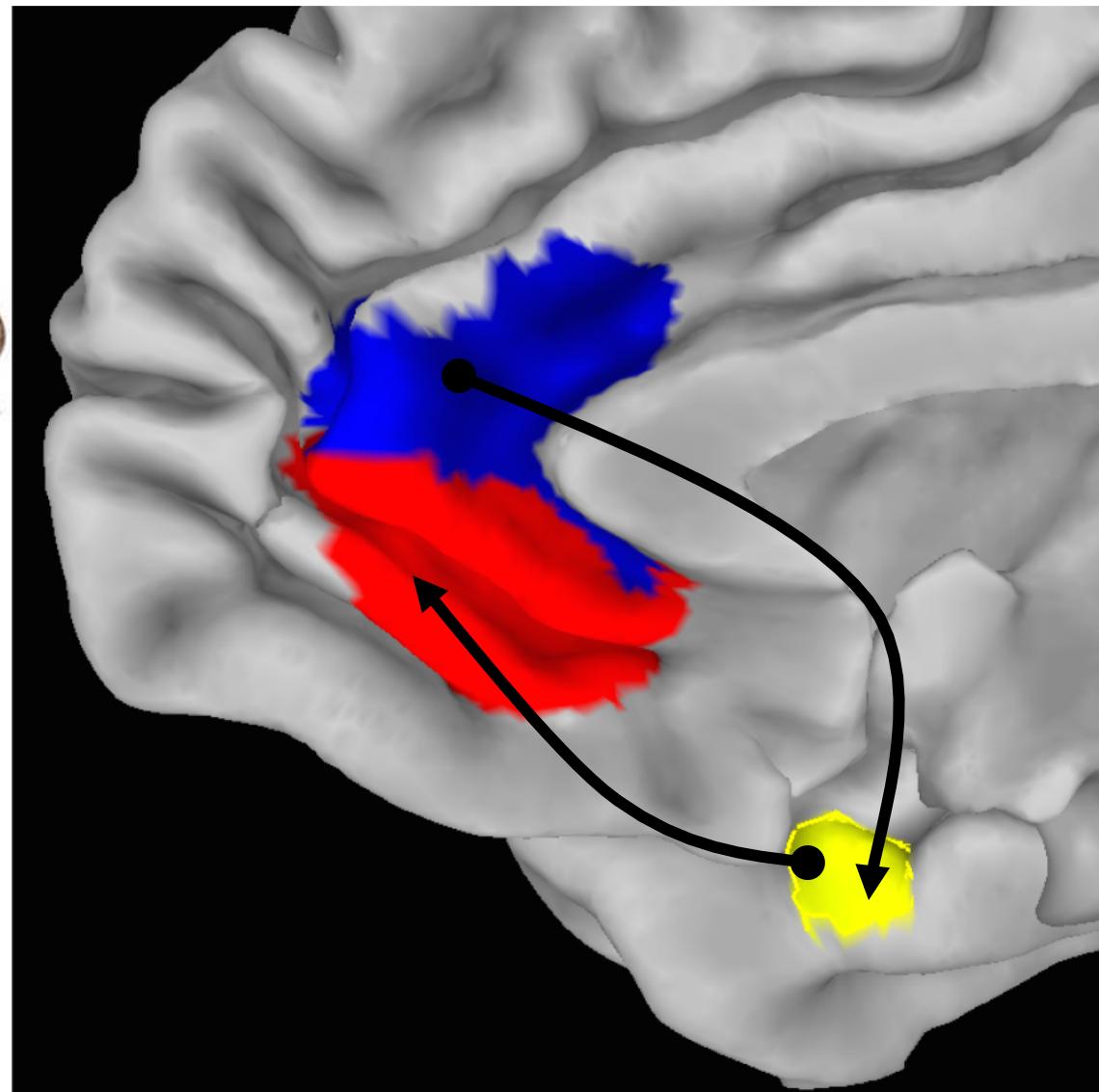
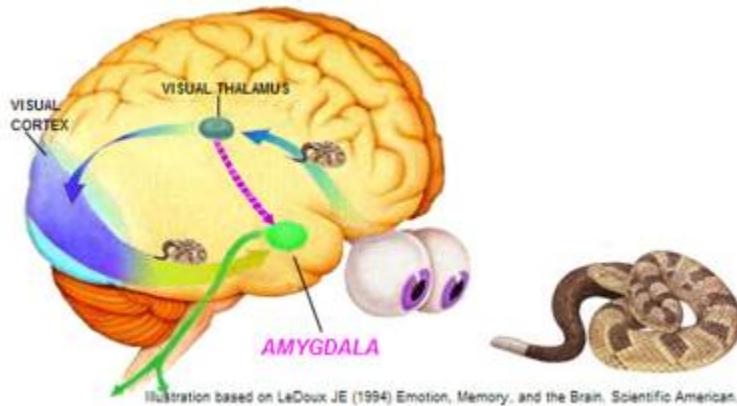
b



d



# A key circuit for emotion regulation related to GxE and extinction



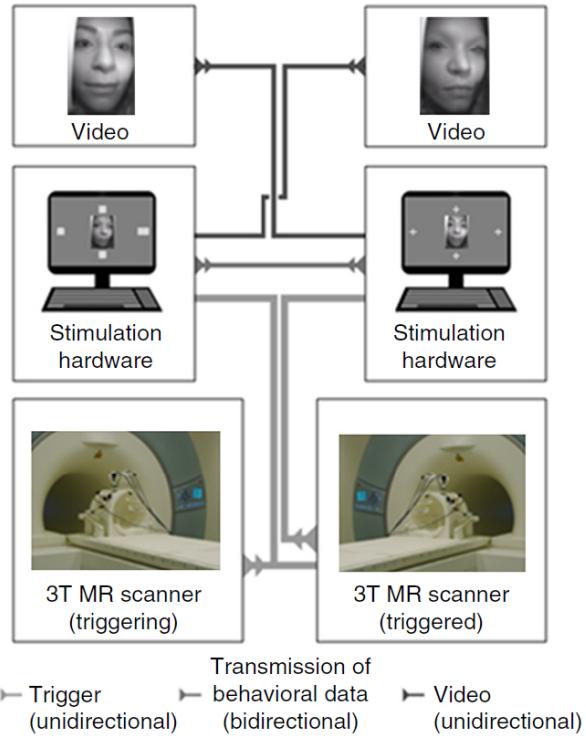
Pezawas\*, Meyer-Lindenberg\*  
et al. **Nat Neurosci** 2005,  
Meyer-Lindenberg et al.  
**PNAS** 2006  
Pezawas\*, Meyer-Lindenberg\*  
et al. **Mol Psychiatry** 2008

# Causes ?



# Neurogeography

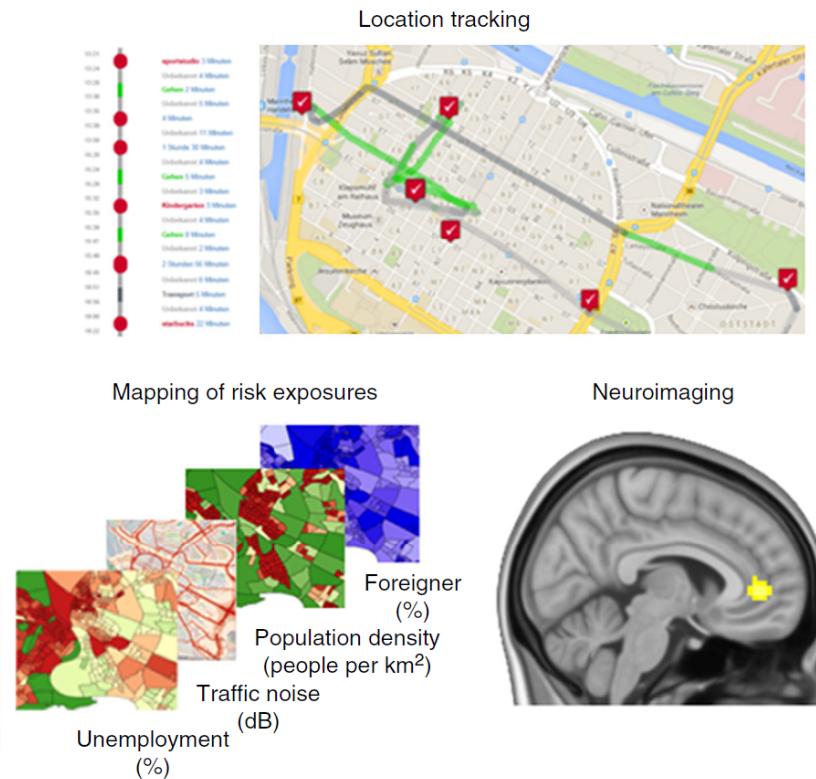
a



b



Ambulatory assessment



# STRESS AND THE CITY

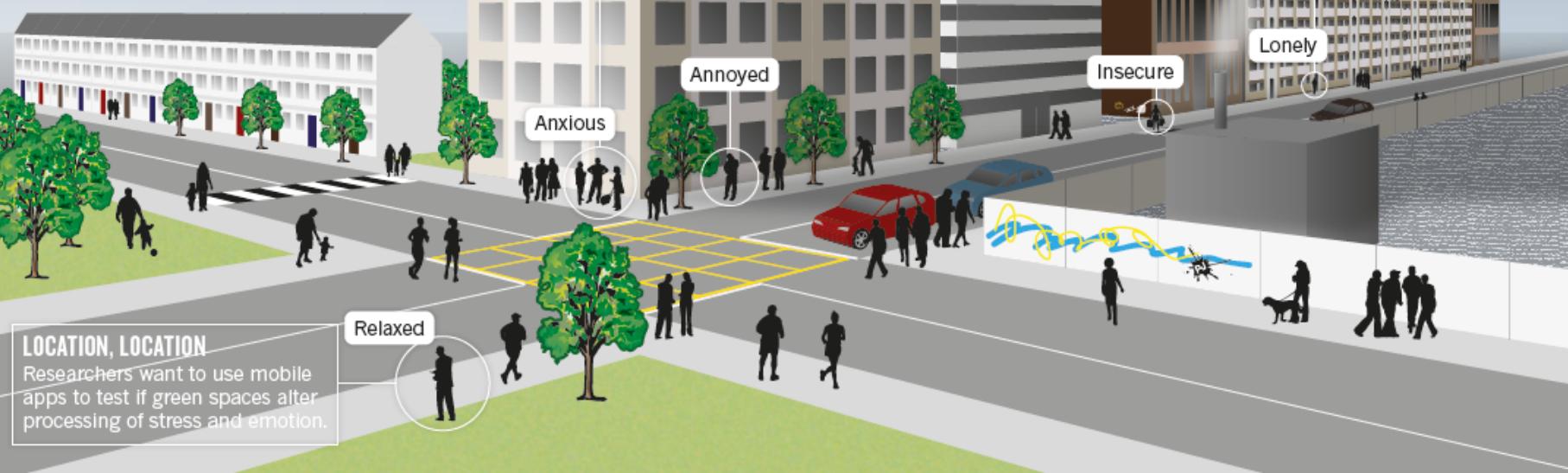
RESEARCHERS ARE TRYING TO IDENTIFY WHICH PARTS OF CITY LIFE ARE THE MOST STRESSFUL, AND HOW THIS MIGHT CONTRIBUTE TO MENTAL-HEALTH DISORDERS.

## URBAN HABITAT

Brain-imaging studies suggests that the brains of city-dwellers respond more to social stress, such as disapproval, than do those of country-dwellers.

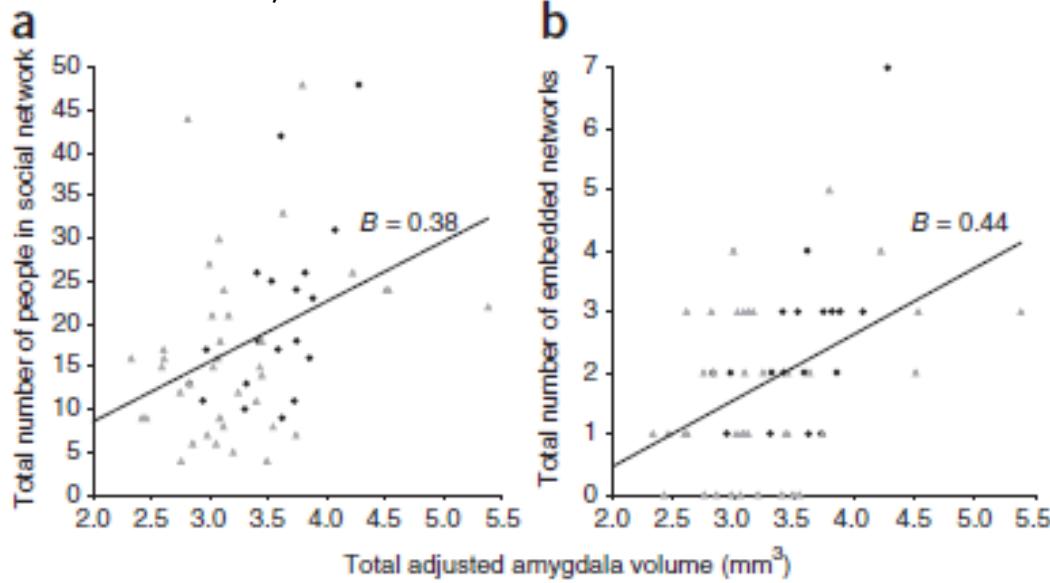
## IMMIGRATION AND ISOLATION

Feeling different from neighbours — owing to socioeconomic status or ethnicity — may be a factor. Immigrant populations have an increased risk of psychiatric disease.



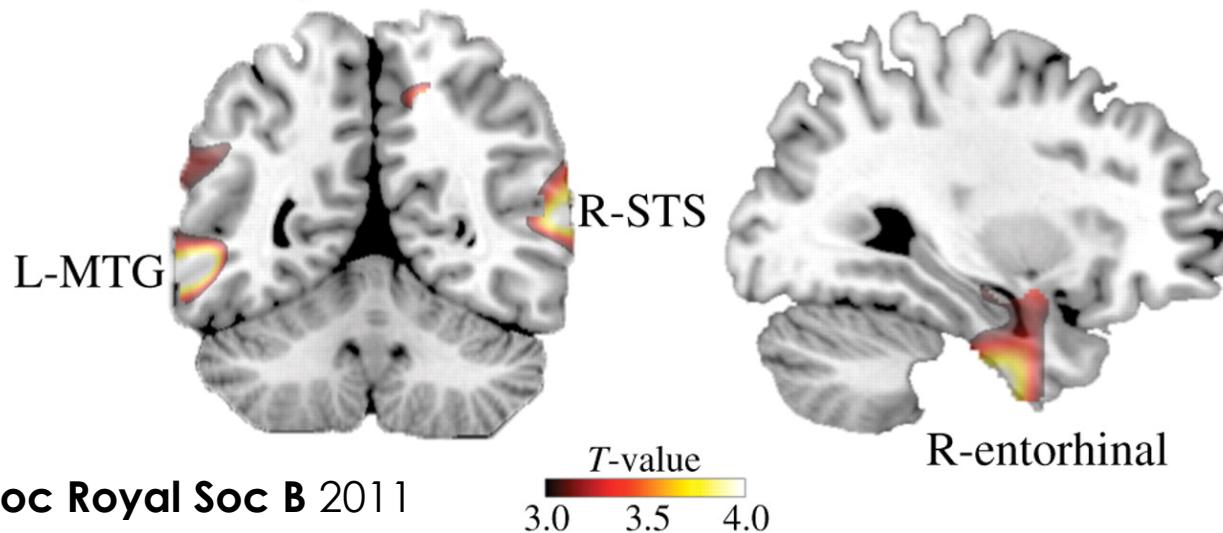
# Social network: structural effects

Bickart et al., **Nat Neurosci** 2010



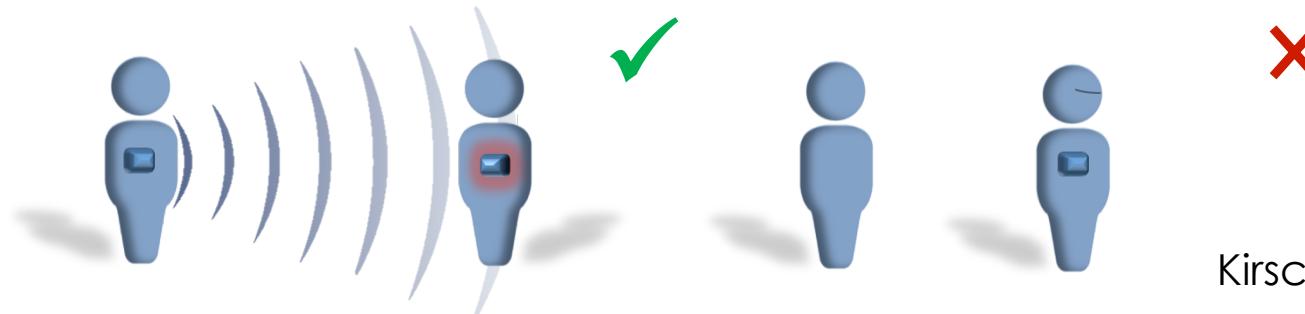
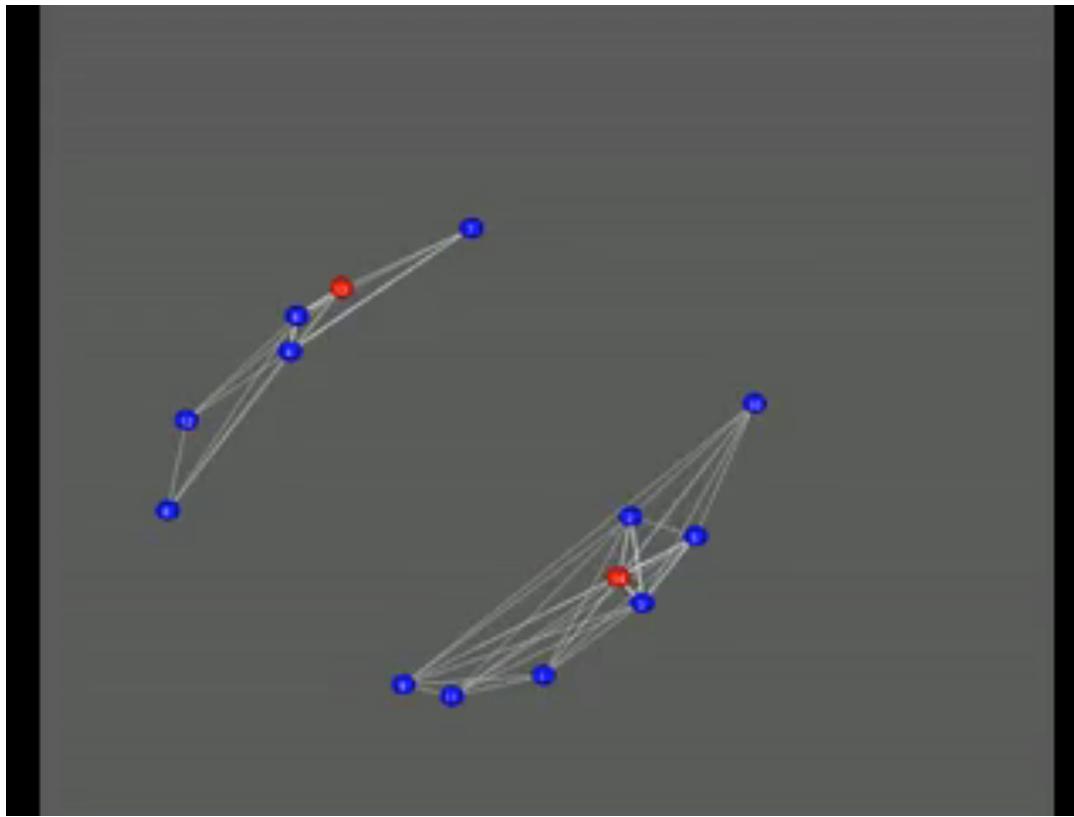
$$y = -54$$

$$x = 30$$



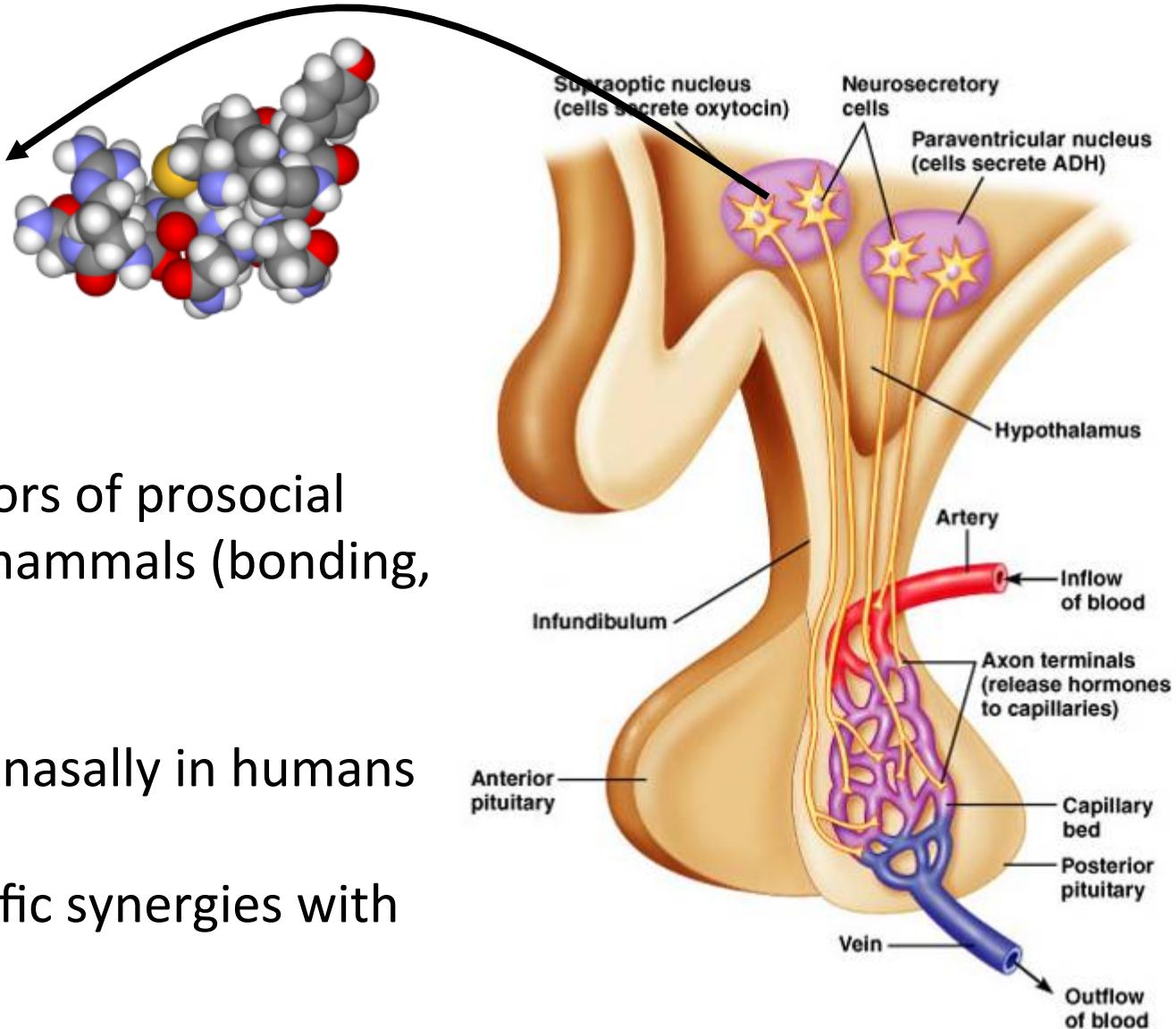
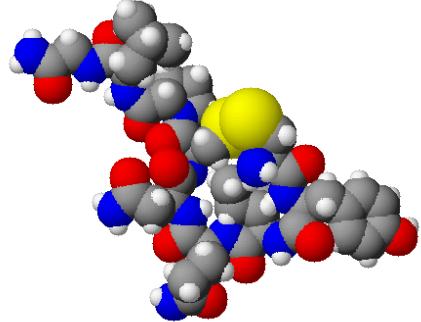
Kanai et al., **Proc Royal Soc B** 2011

# Mapping social structure using RFID



Kirsch et al., in progress

# Prosocial neuropeptides

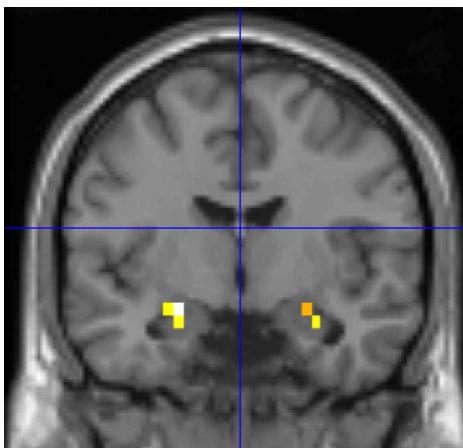


- Molecular mediators of prosocial interactions in all mammals (bonding, trust)
- Reach brain given nasally in humans
- Potential for specific synergies with psychotherapy

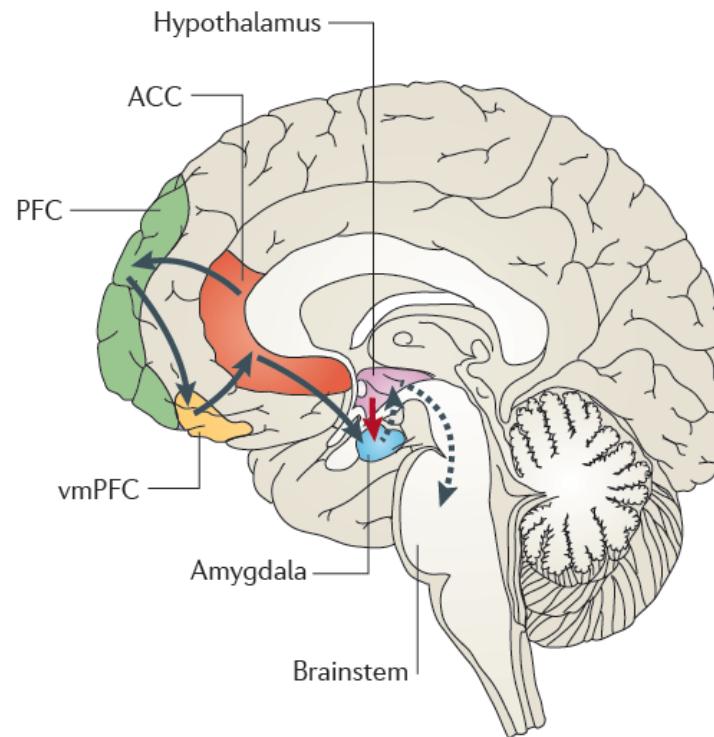
# Prosocial Pharmacotherapy



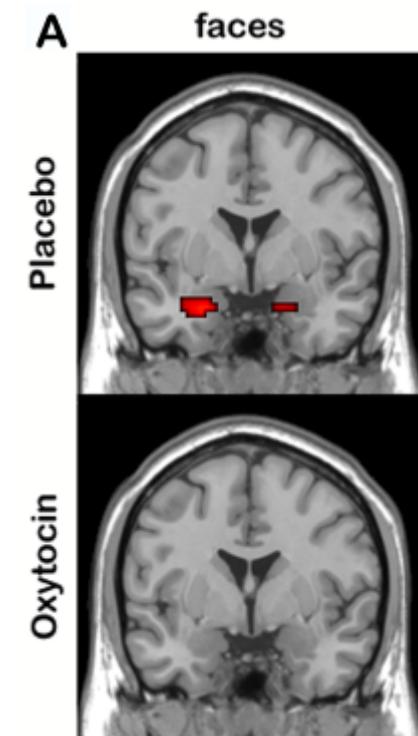
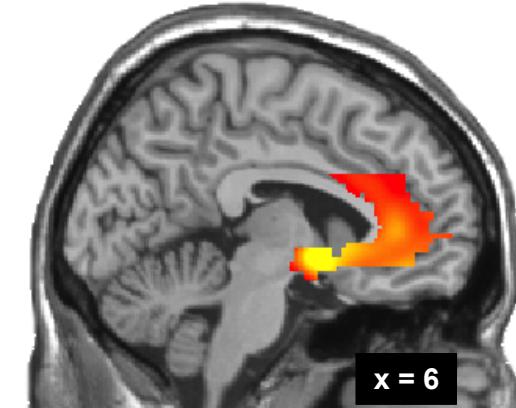
Zink et al., J Neurosci 2010



Meyer-Lindenberg et al., Mol Psychiatry 2008

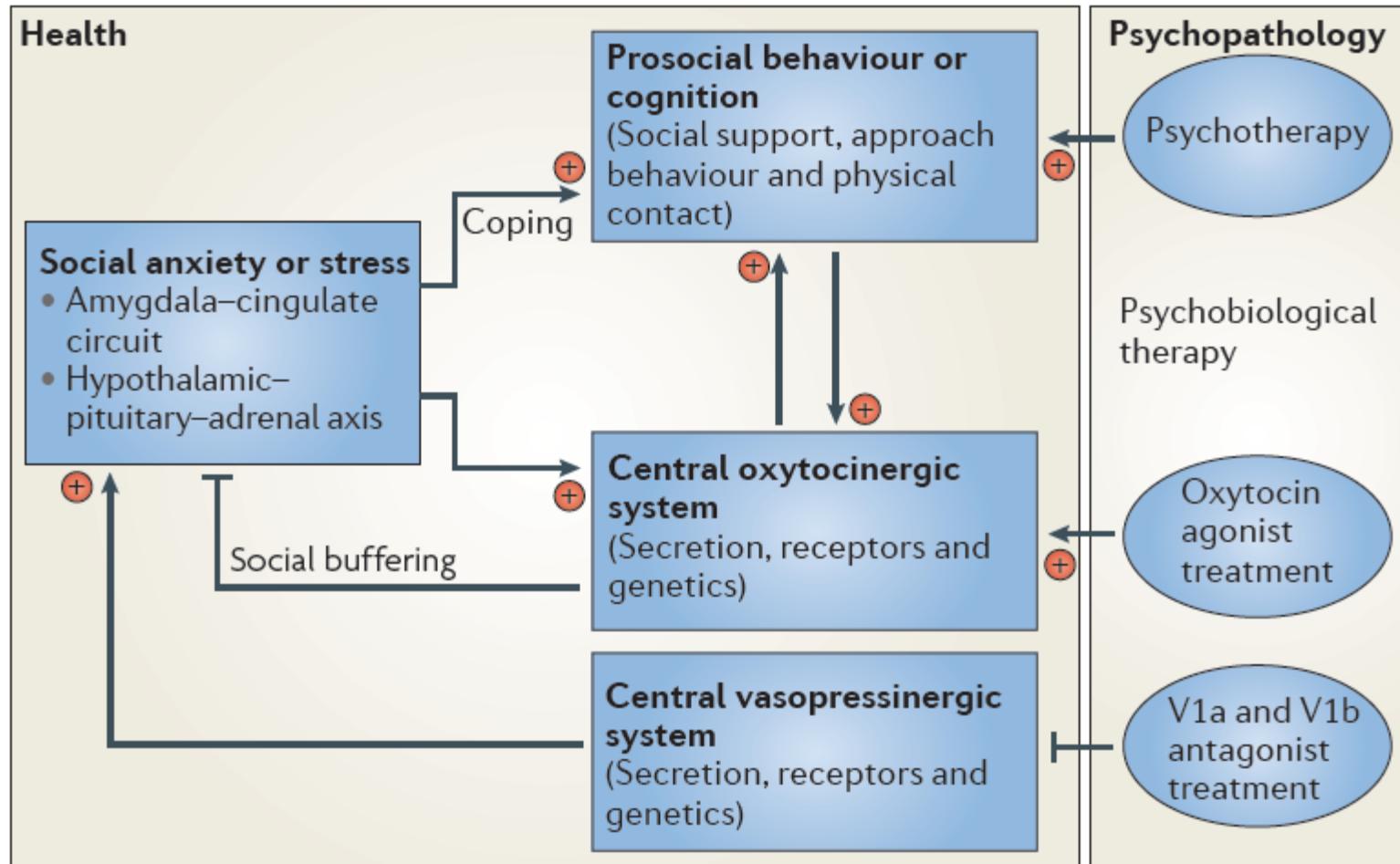


Meyer-Lindenberg et al.,  
Nat Rev Neurosci 2011



Kirsch et al.  
J Neurosci 2005

# Neuropsychotherapy: intervention points



# Thanks



Bundesministerium  
für Bildung  
und Forschung

Deutsche  
Forschungsgemeinschaft

**DFG**

**NIMH**  
National Institute  
of Mental Health



SEVENTH FRAMEWORK  
PROGRAMME

**NARSAD**  
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to Mental Health Research*

Tost, Bilek, Akdeniz, Pezawas,  
Lederbogen, Haddad, Kirsch,  
Heinrichs, Walter, Grimm,  
Nieratschker, Boehringer

- Department of Psychiatry, WG  
Systems Neuroscience in  
Psychiatry

