# *Why Facebook Wont Get You Any More Friends*
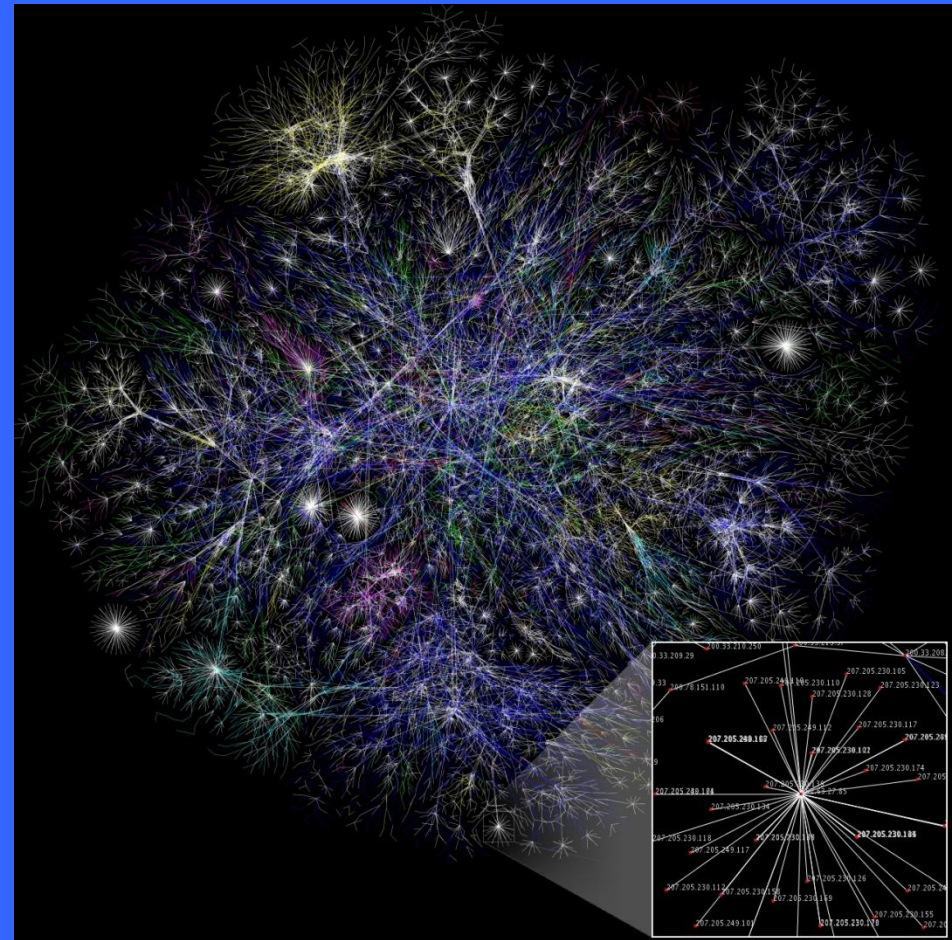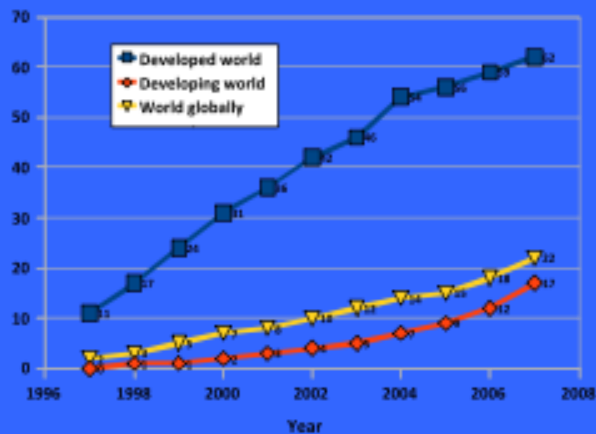
## Robin Dunbar

### Institute of Cognitive & Evolutionary Anthropology
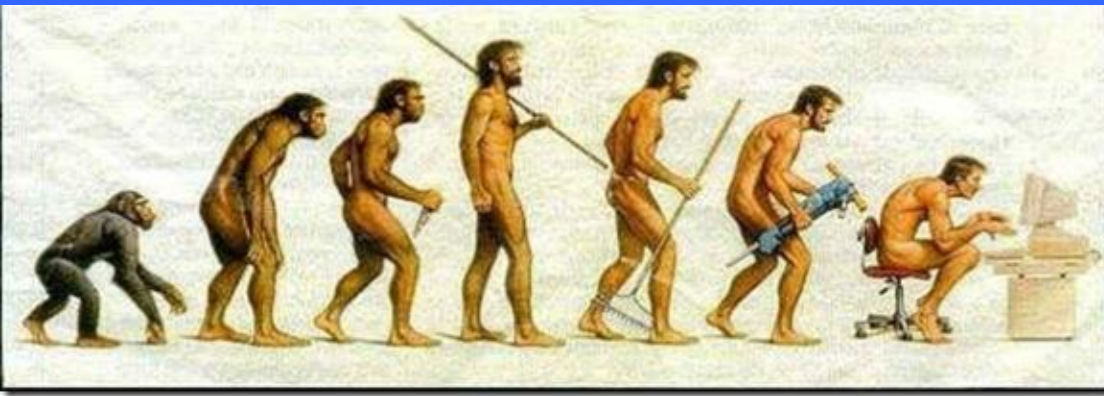
### University of Oxford

# The
# Global Village?

- The Internet was based on the promise of enlarging your social world beyond the limits of the local village

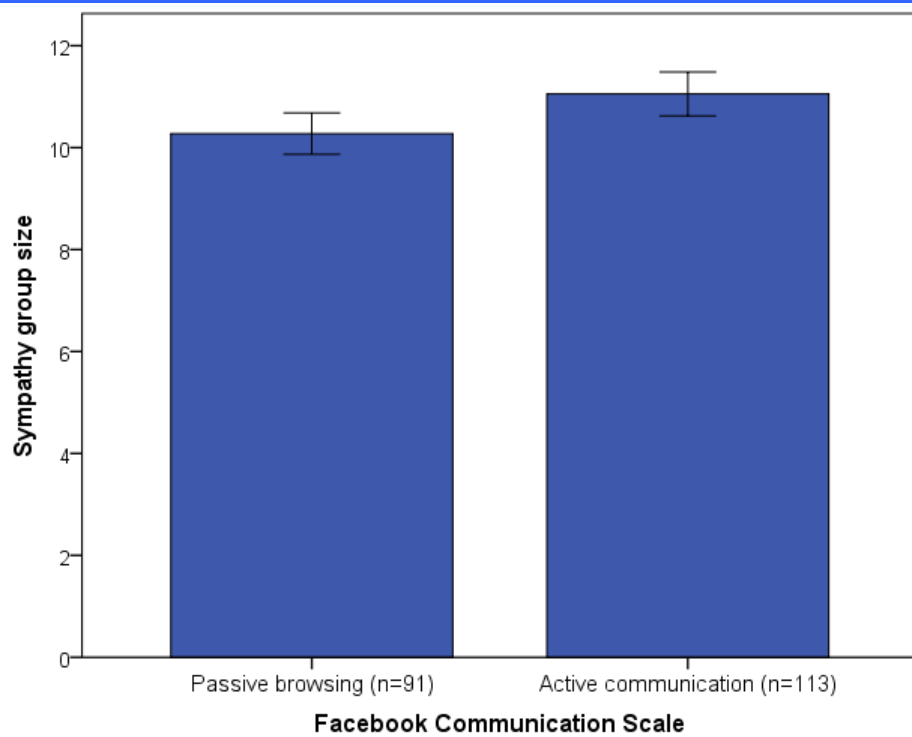Internet users per 100 inhabitants 1997-2007 (Source: ITU)



- Developed world
- Developing world
- World globally

But does it actually *work*?

# Does Technology Really Widen Your Horizons?

## The maintained relationships of a Facebook user

As you might expect, Facebook users actually maintain their closest relationships with a smaller collection of their Facebook friends – the group of people who they know.

What's interesting is just how many relationships are maintained since Facebook allows you to passively read news about your friends.

There is also a distinct difference by gender, women keep in touch with more of their network than men.

**number of friends**
- maintained relationship
- one-way communication
- mutual communication

of 500 friends — 39, 47, 17, 26, 10, 16

of 150 friends — 19, 22, 7, 11, 5, 7

of 50 friends — 9, 10, 4, 6, 3, 4

- The answer from Facebook's own data seems to be: No

- Modal number of friends = 120-130

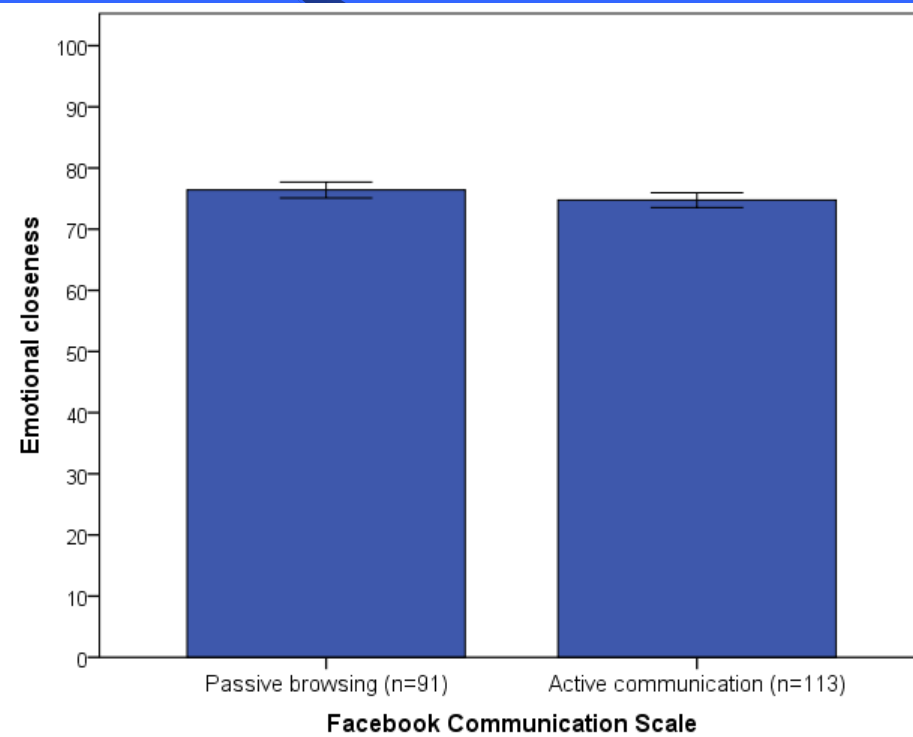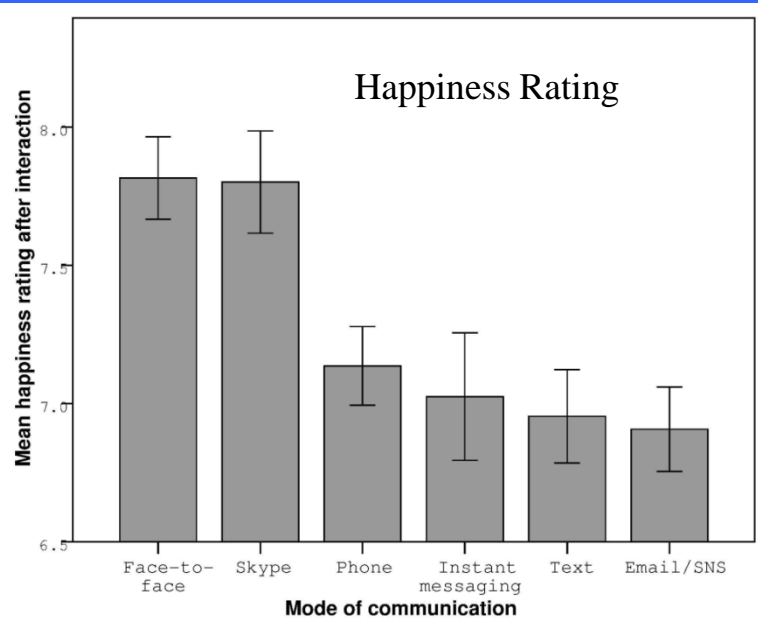- You may list 100s of friends, but you only <u>talk</u> to a few

Cameron Marlow web-blog
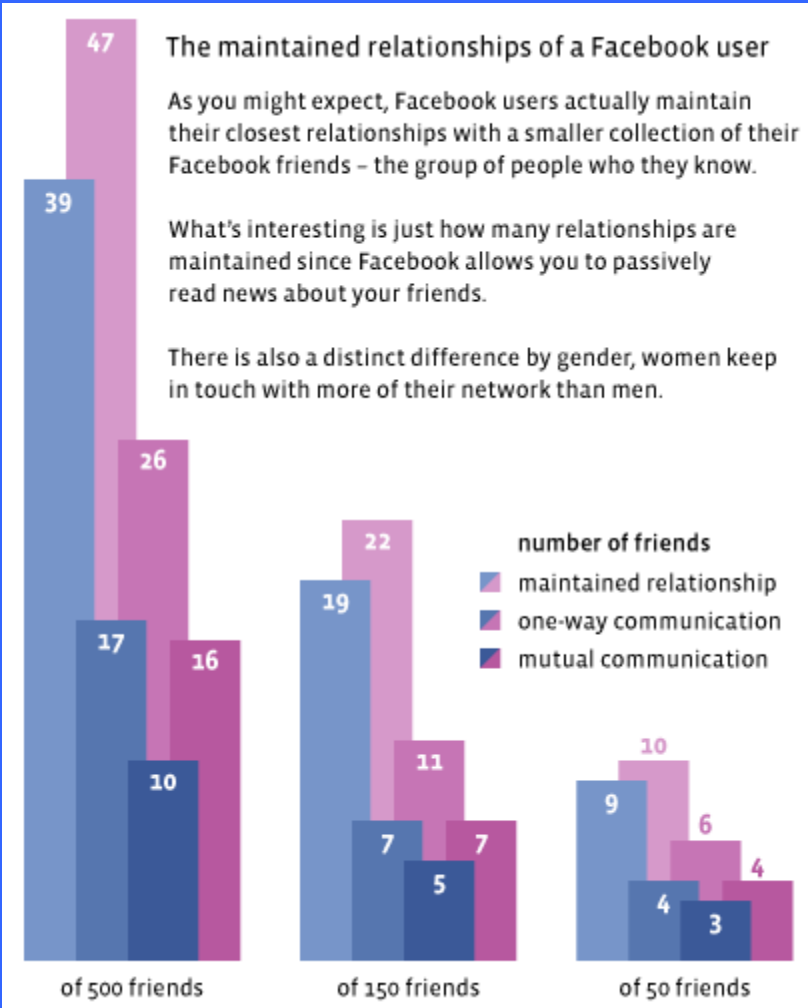
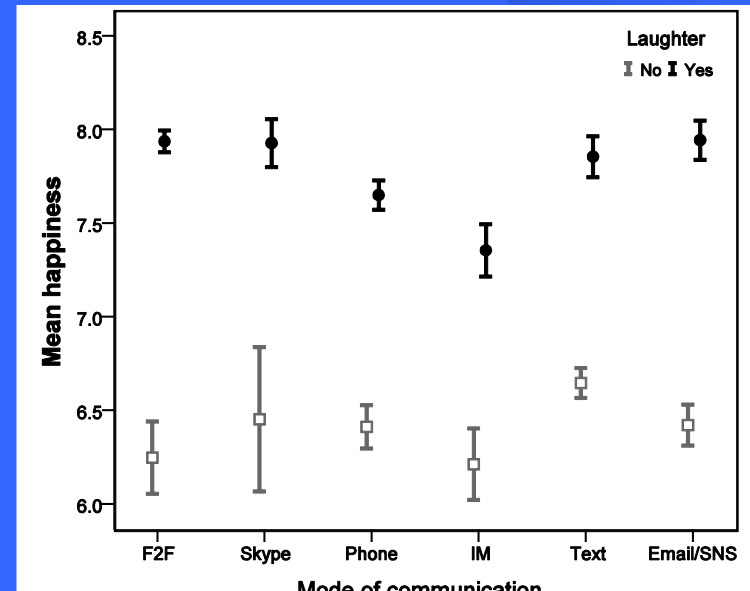# Active communication on Facebook

Network size

Emotional closeness



Veldkamp, Roberts, Dunbar & Pollet (under review).

# Just How Good is the Digital World?

Happiness Rating



Laughter



- For both perceived happiness AND laughter rates, F2F and Skype are better than all other media
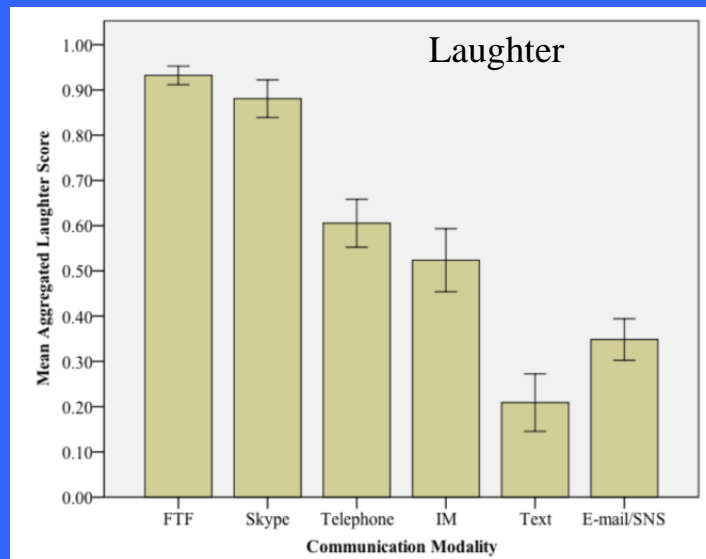
  - Laughter influences happiness

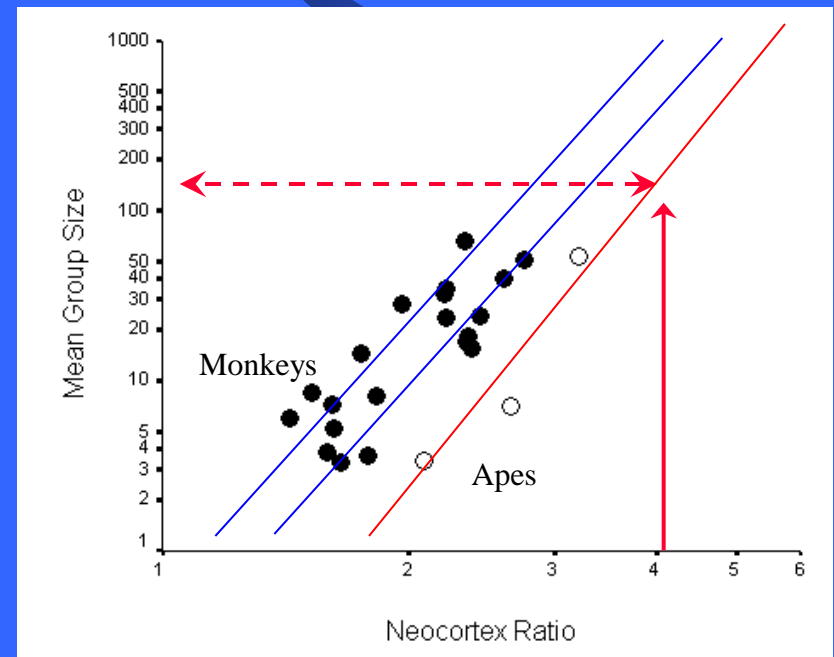# So …Why Doesn't It Work?

- The Social Brain Hypothesis
  ….an explanation for why primates have unusually large brains

- Predicted group size for humans is ~150

  "Dunbar's Number"

# Human Social Groups

## These all have mean sizes of 100-200

| | |
|---|---|
| Neolithic villages 6500 BC | 150-200 |
| Modern armies (company) | 180 |
| Hutterite communities | 107 |
| 'Nebraska' Amish parishes | 113 |
| business organisation | <200 |
| ideal church congregations | <200 |
| Doomsday Book villages | 150 |
| C18th English villages | 160 |
| GoreTex Inc's structure | 150 |
| Research sub-disciplines | 100-200 |

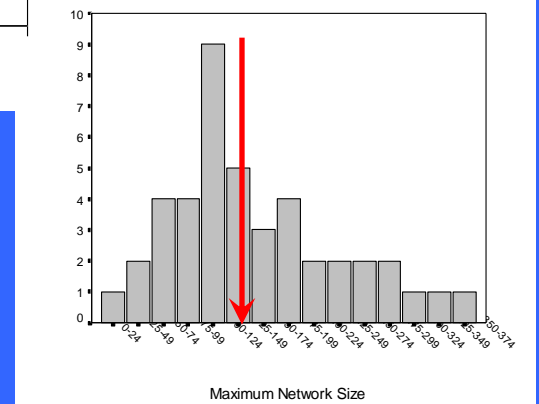| | |
|---|---|
| **Small world experiments** | **134** |
| **Hunter-Gatherer communities** | **148** |
| **Xmas card networks** | **154** |

**"Reverse" Small World Experiments**

Killworth et al (1984)
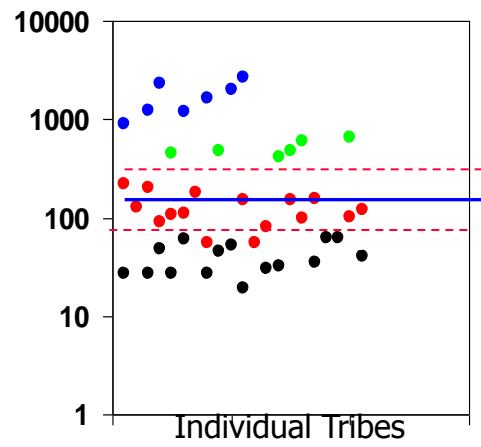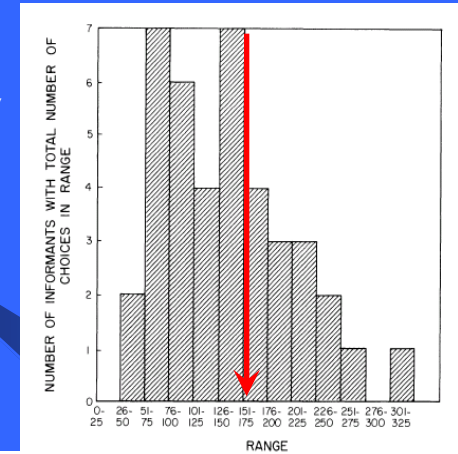
**Hunter-Gatherer Societies**

Dunbar (1993)

**Xmas Card Networks**

Hill & Dunbar (2003)

http://www.youtube.com/watch?v=ApOWWb7Mqdo

Luckily, it's a hoax….
It was an advertising stunt!

Her 152 friends recorded for posterity…..?
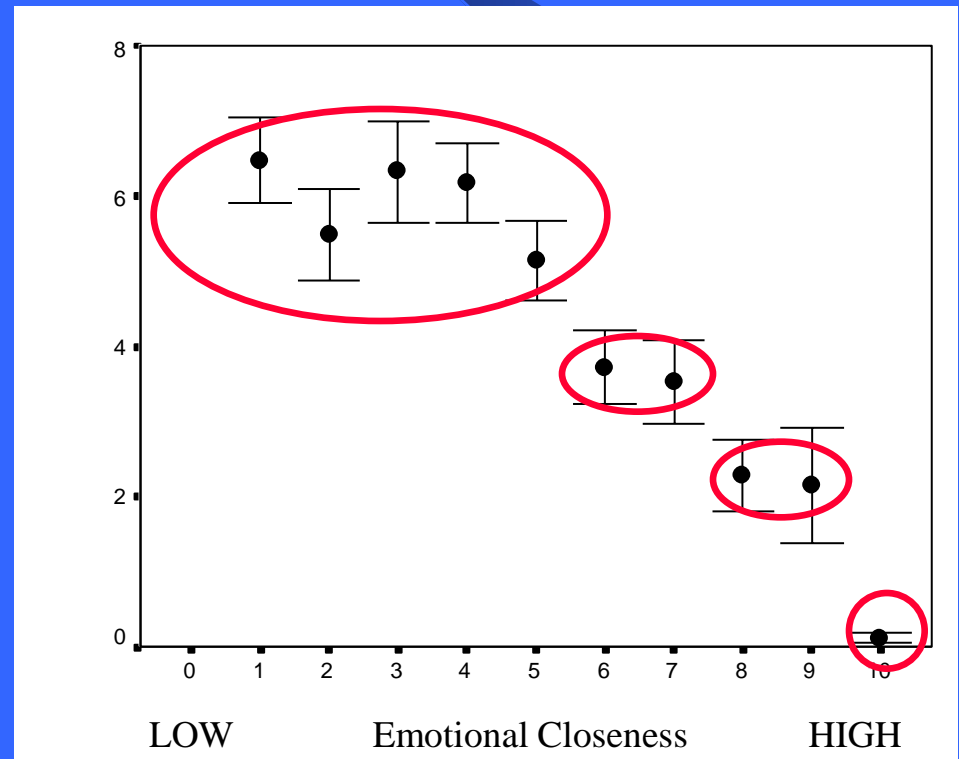
# BUT….our friends are NOT all the same!



← Our social world is less like this
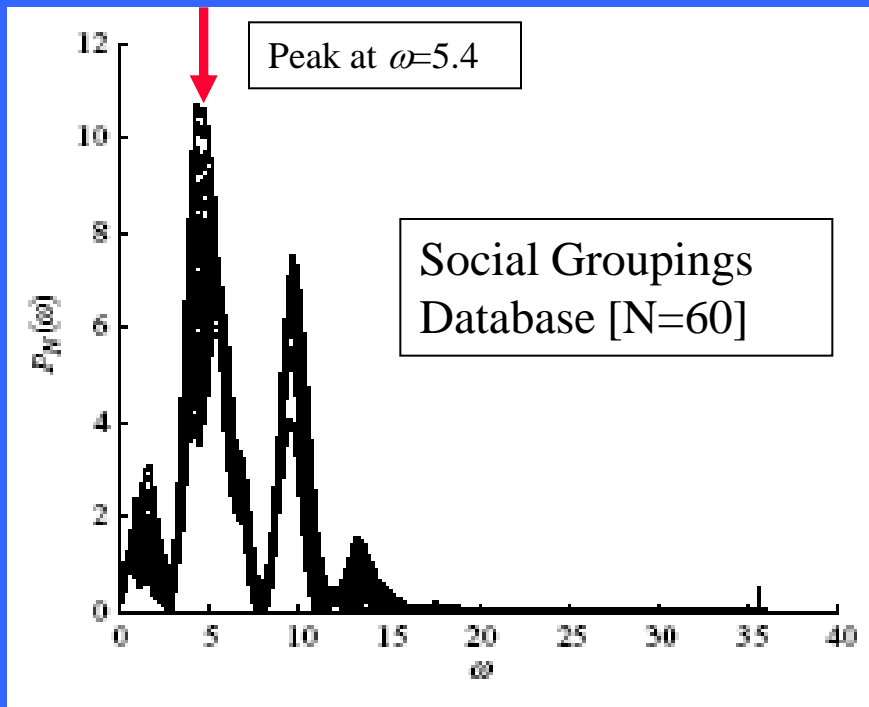
…..and more like this

# Intimacy, Frequency and Trust

- Relationship between frequency of contact and intimacy

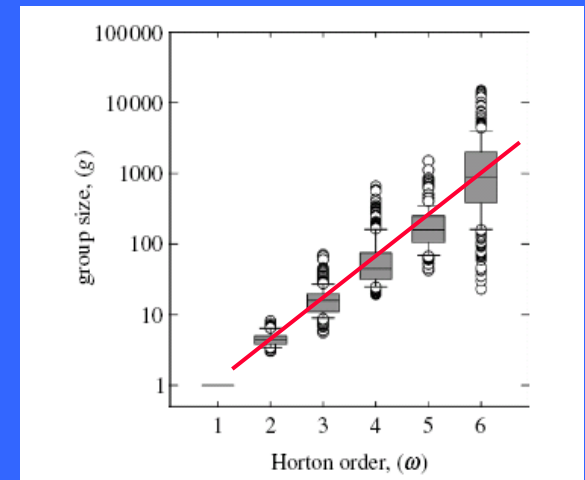- Trust and obligation seem to be important
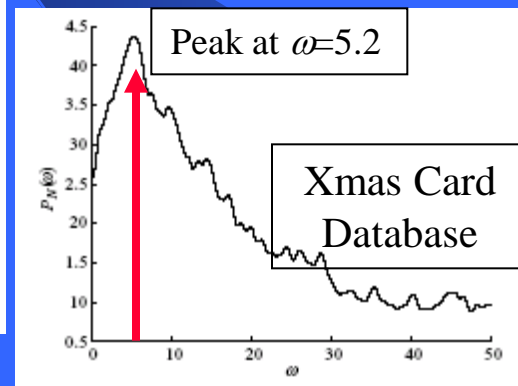
# The Fractal Periodicity of Human Group Sizes

Sizes of Hunter-Gatherer Groupings



Hamilton et al (2007)



Peak at $\omega$=5.4

Social Groupings Database [N=60]



Peak at $\omega$=5.2

Xmas Card Database

Scaling ratio = $\exp(2\pi/\omega)$
= 3.2 and 3.3

Zhou, Sornette, Hill & Dunbar (2005)

# The Expanding Circles

- Our relationships form a hierarchically inclusive series of circles of increasing size but decreasing intensity

  [ie quality of relationship]

- 150 = limit on personalised, reciprocated relationships

- These circles continue at 500 and 1500

- 1500 = limit on memory for faces?

Intensity

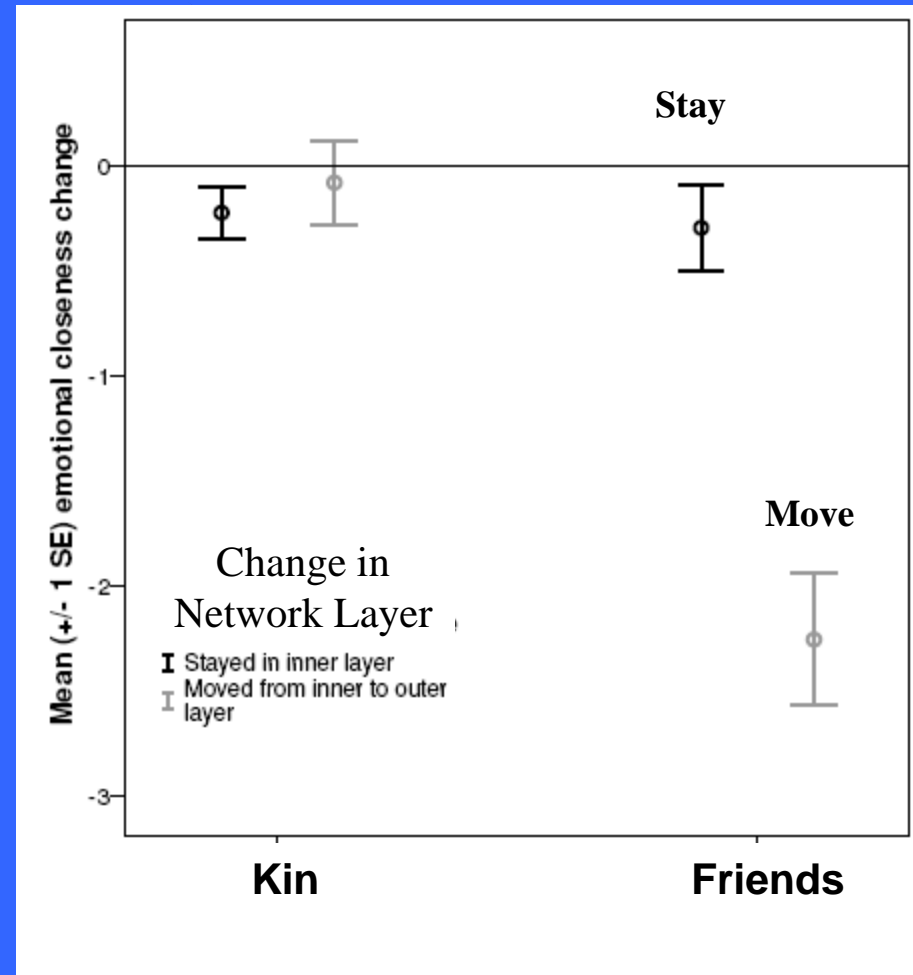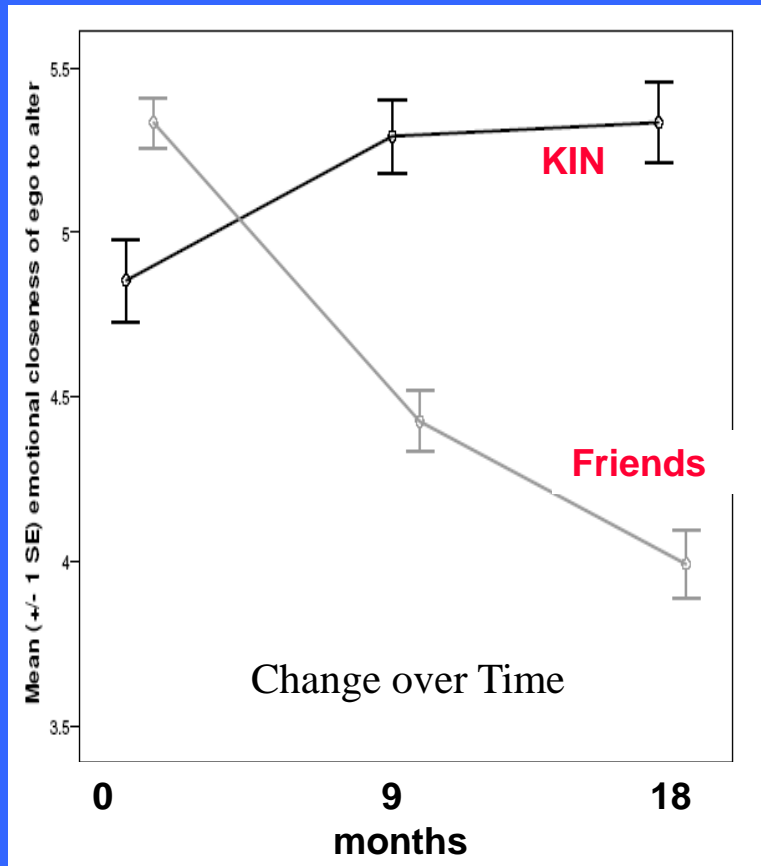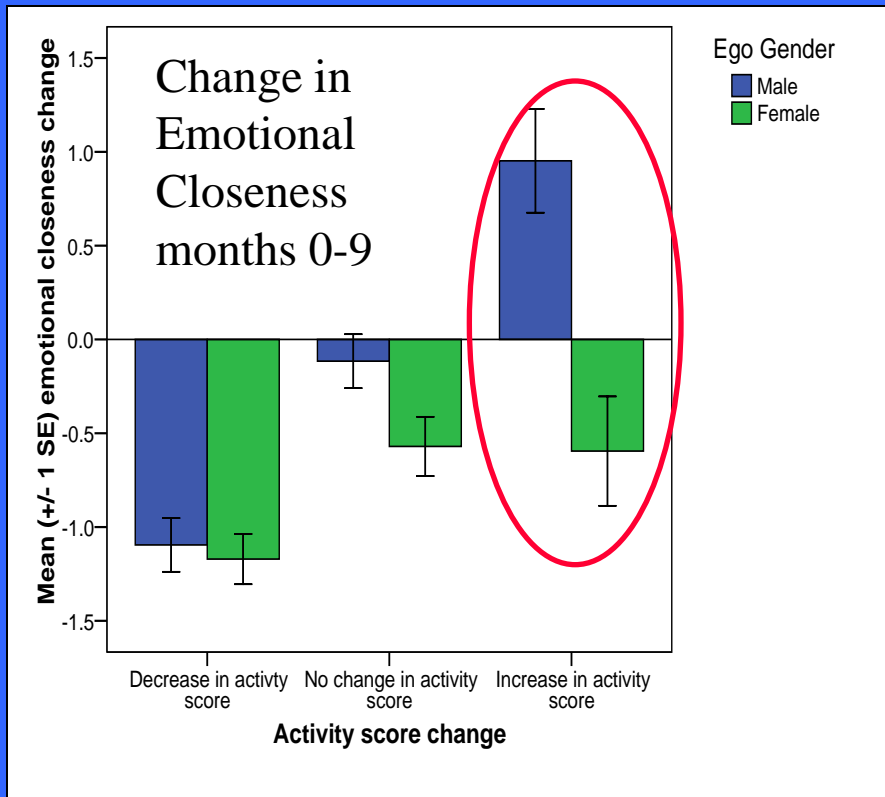EGO

5

15

50

150

500

1500
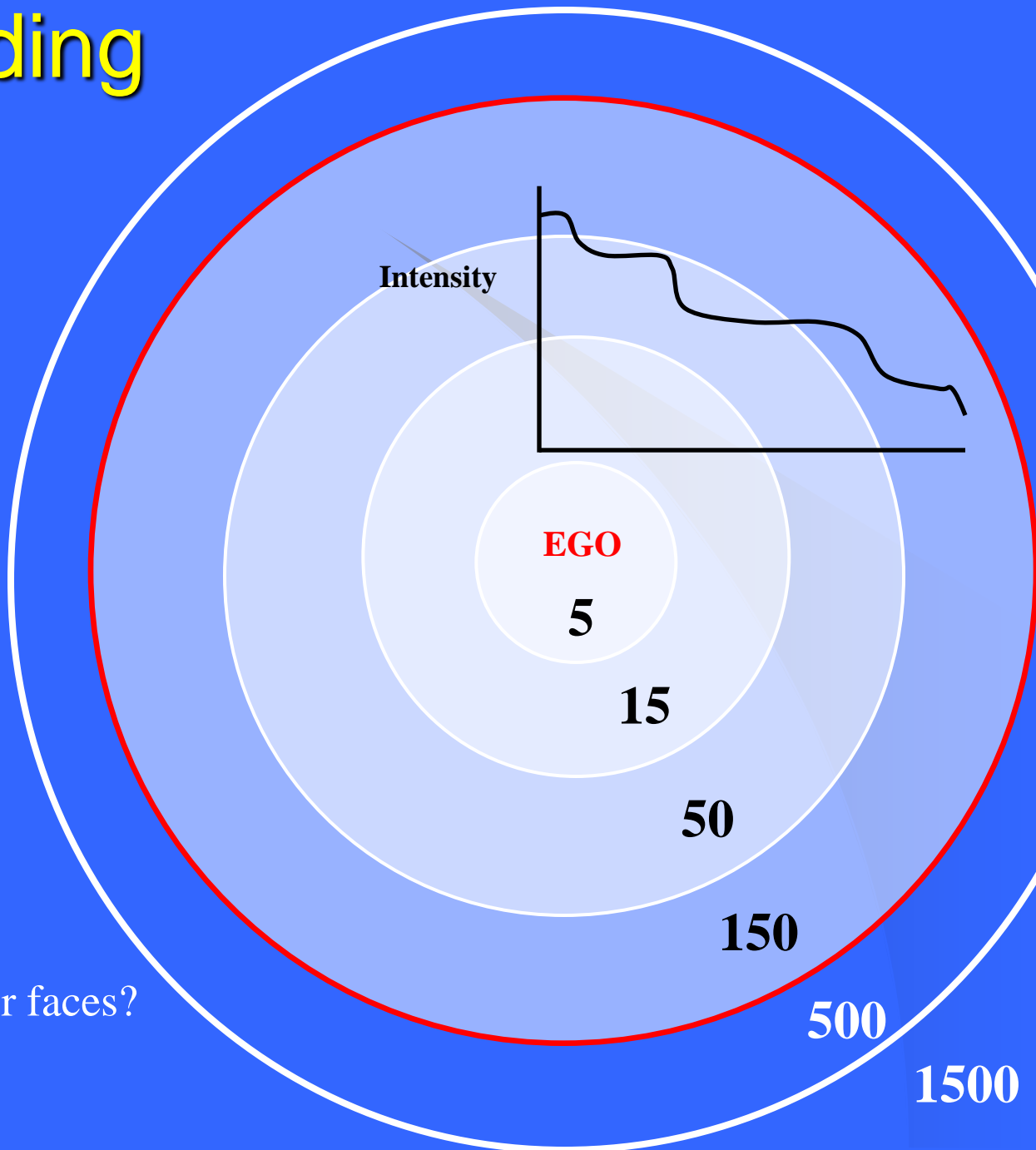
# The Expanding Circles

- Social networks are layered
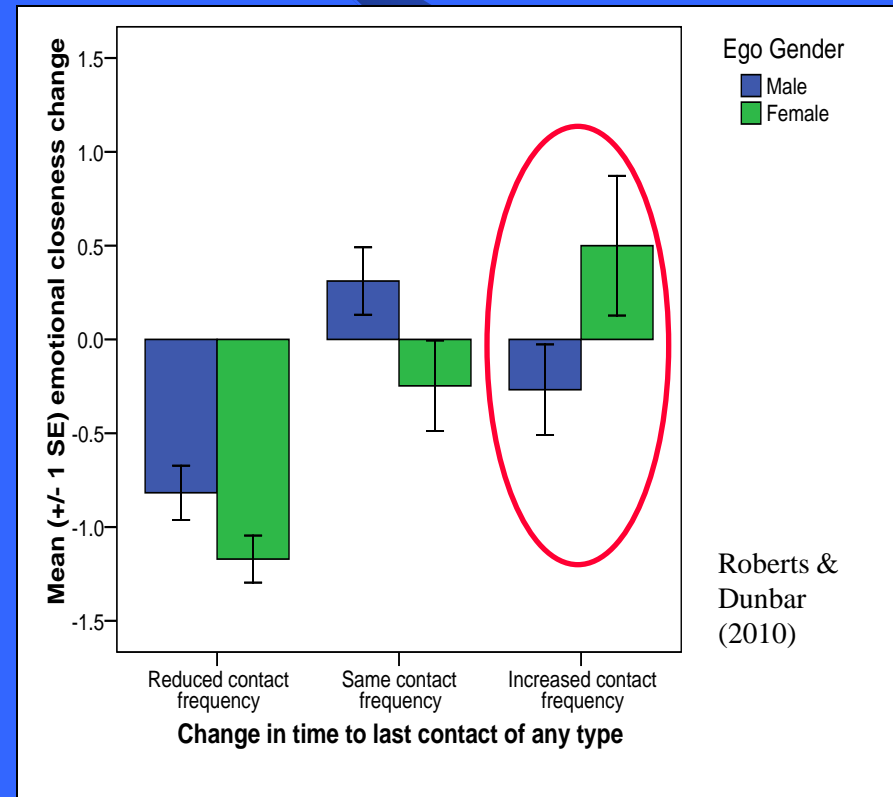- Emotional closeness AND rate of contact decline with layer
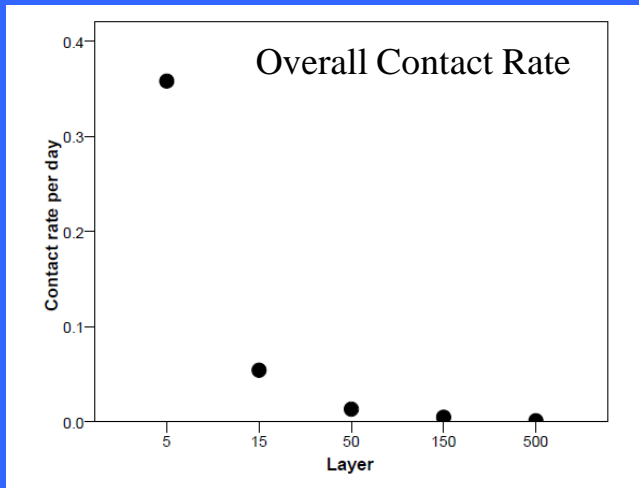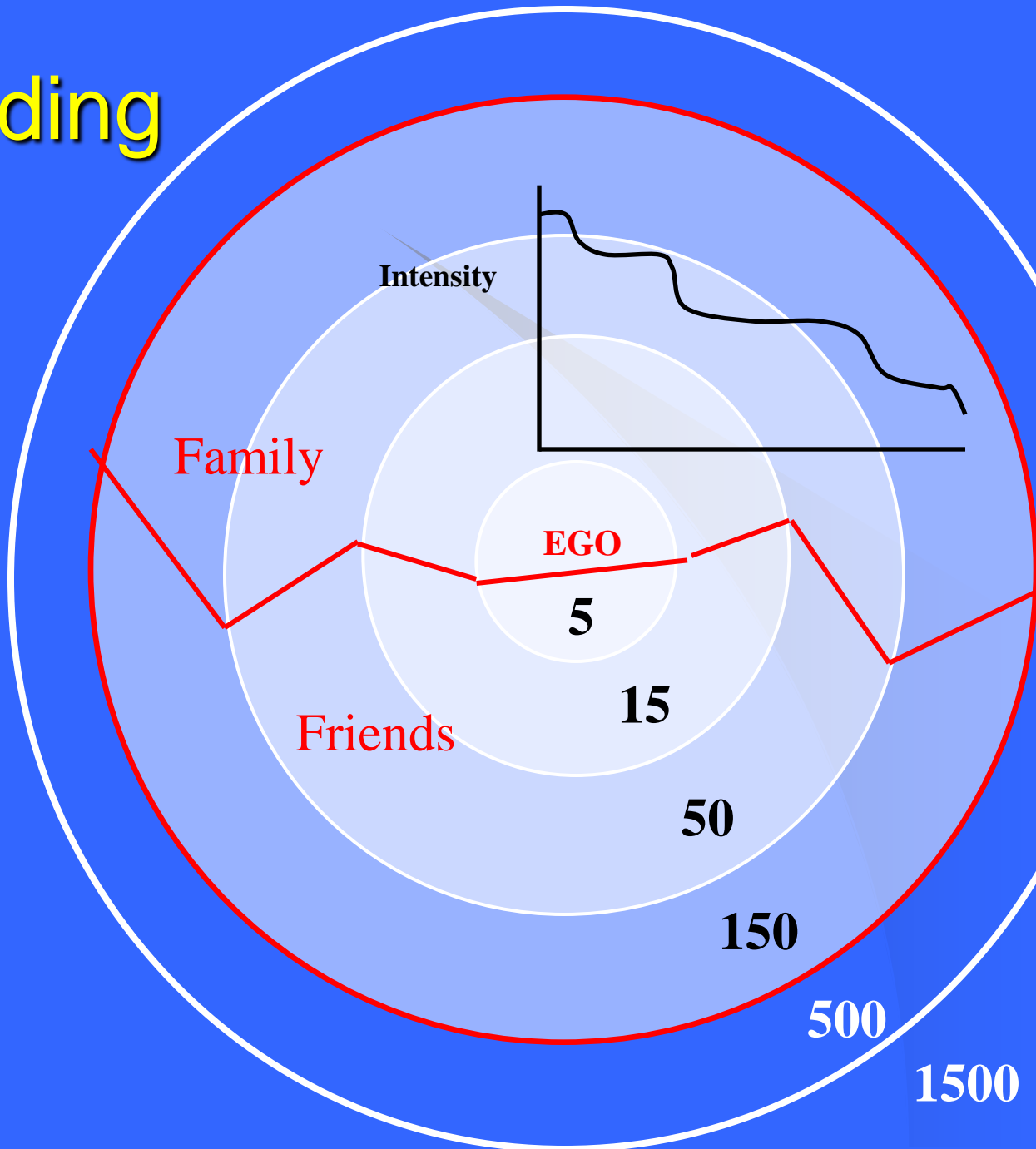
# Stable Family, Fragile Friends

# How to Prevent Relationships Decaying
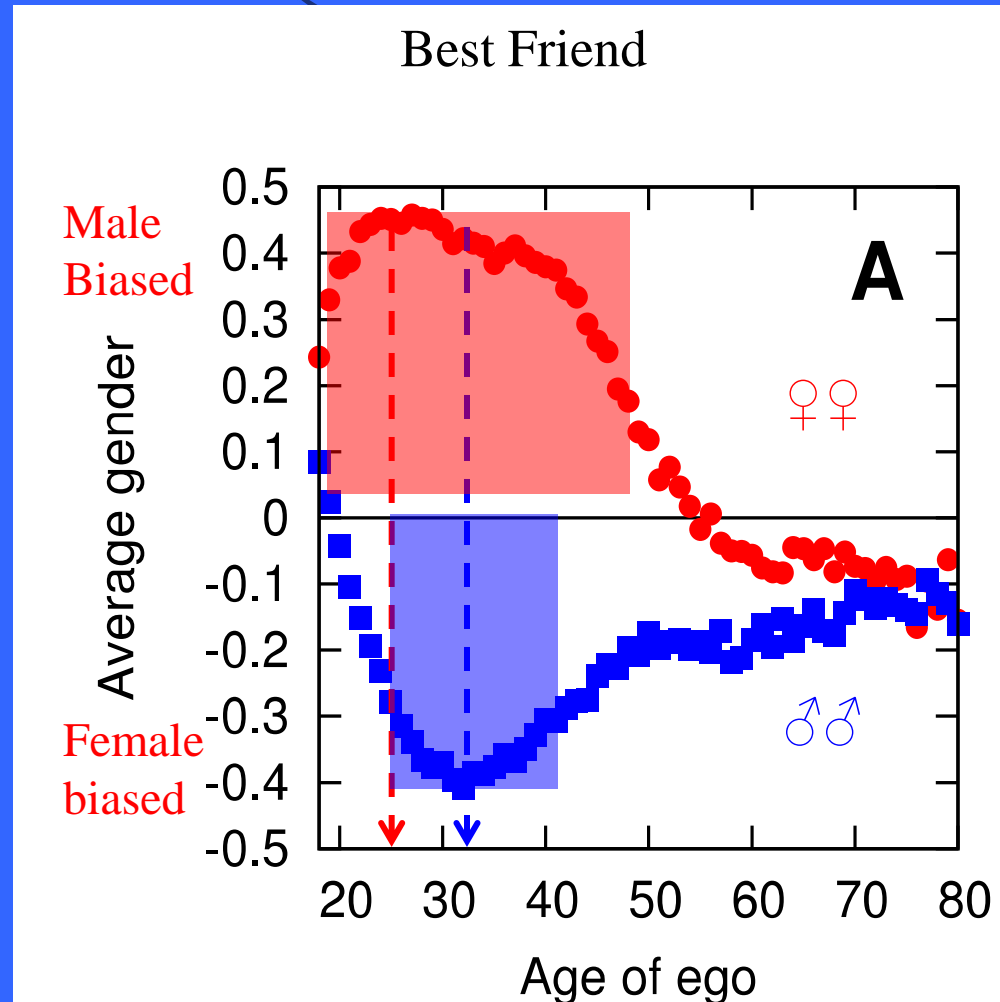


**by change in activity score**

**by change in contact frequency**

# Best Friends: A cellfone dataset

- 2 million subscribers
  2 billion calls + 0.5 billion texts

- Marked sex differences in:
  - Age at onset [18+ vs 23+]
  - Age at peak
    [22-25 vs 32]
  - Duration of peak
    [14 yrs vs 7 yrs]

  - Sex reversal in females @ age 55
    …converging with males at a female-bias in older age



Best Friend

A

# Age Changes by Gender

- All show bimodal patterns with an age-difference of ~25 years

- BUT note very focussed partner bias at 25 AND women's stronger focus on partner

- Clearer bimodal peaks at 50, with women having a more balanced split with a daughter focus
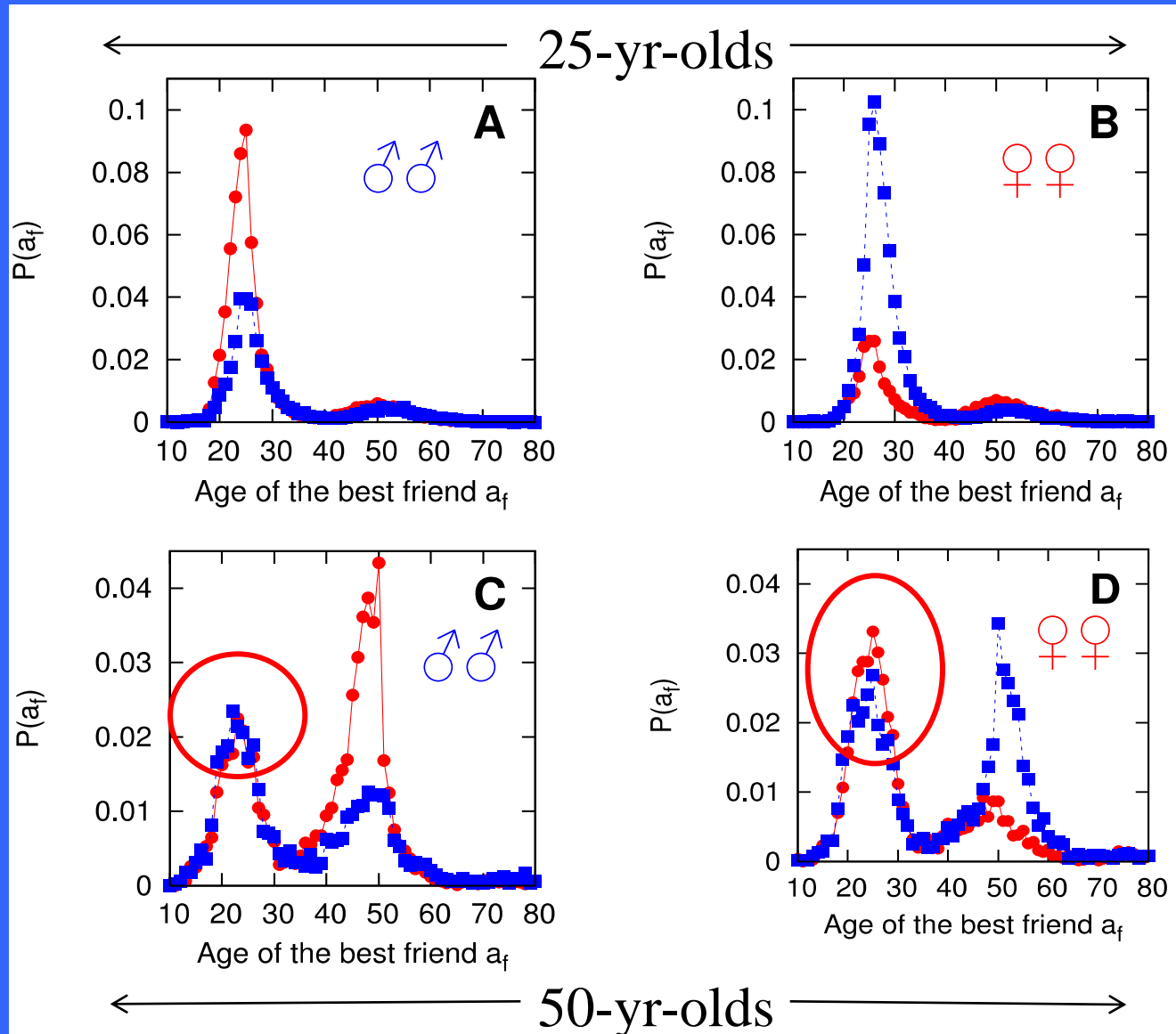
# How Costly is Romance?

- Internet sample of 540
- For the inner circle of 5 intimates:
- Being in a romantic relationship costs you two friendships
- Typically, you sacrifice one Friend and one Family member
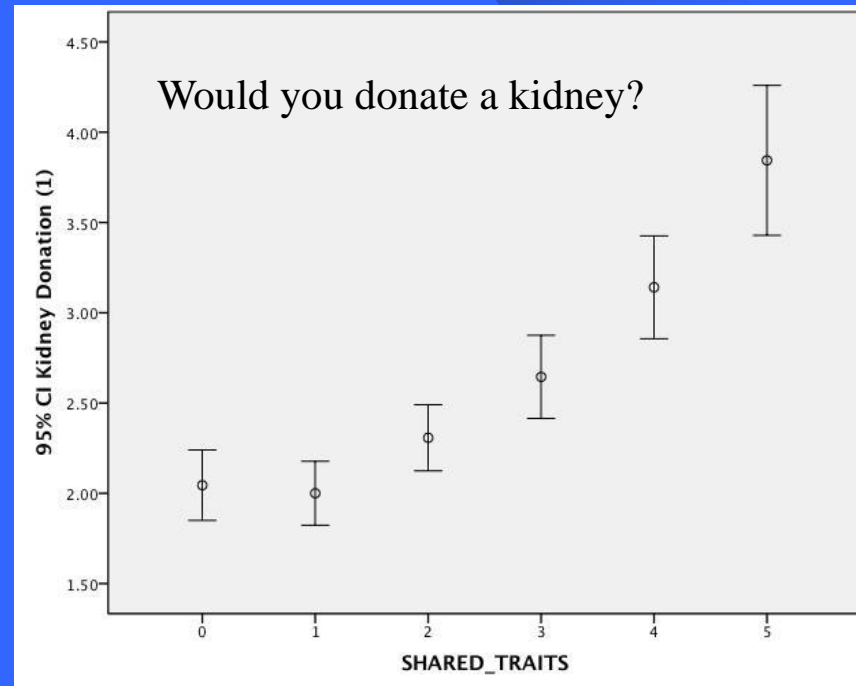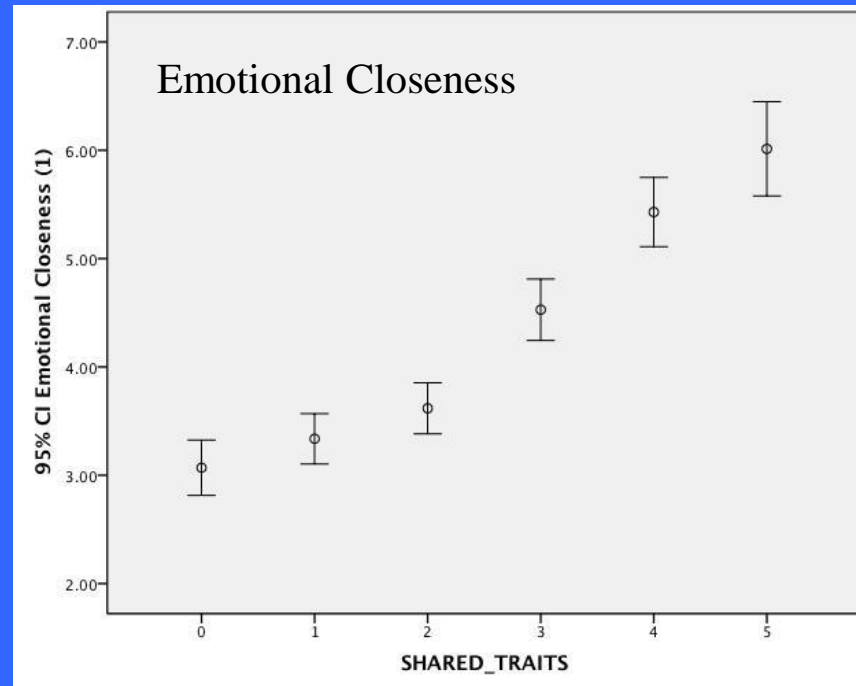- The problem seems to be the time cost
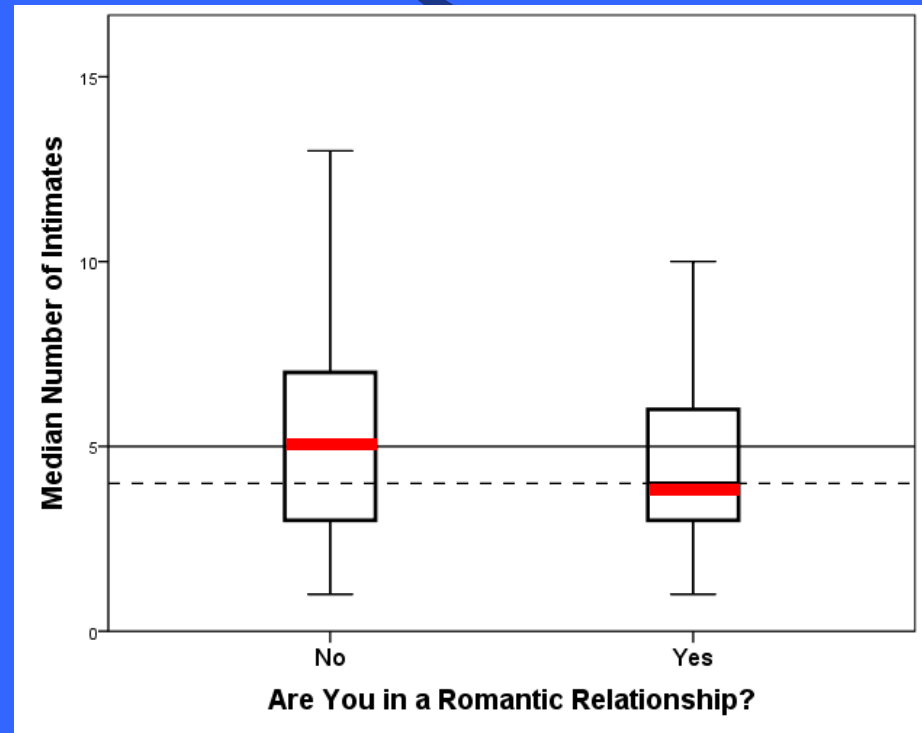
# Birds of a Feather…

- The more traits we share with someone, the closer we feel to them emotionally

  ……AND the more likely we are to act altruistically towards them

  on two measures of altruism:

  - o Give £5000
  - o Donate a kidney



Emotional Closeness



Would you donate a kidney?

# The Importance of Humour…

- The more we share a sense of humour, the more we feel engaged with someone

- 100 jokes from 100 best jokes compendium

- 18 jokes most disagreed about

- Ss rate jokes [yes/no]

- Two weeks later, Ss presented with joke profiles of another person varying their own preferences



Error Bars: +/- 2 SE
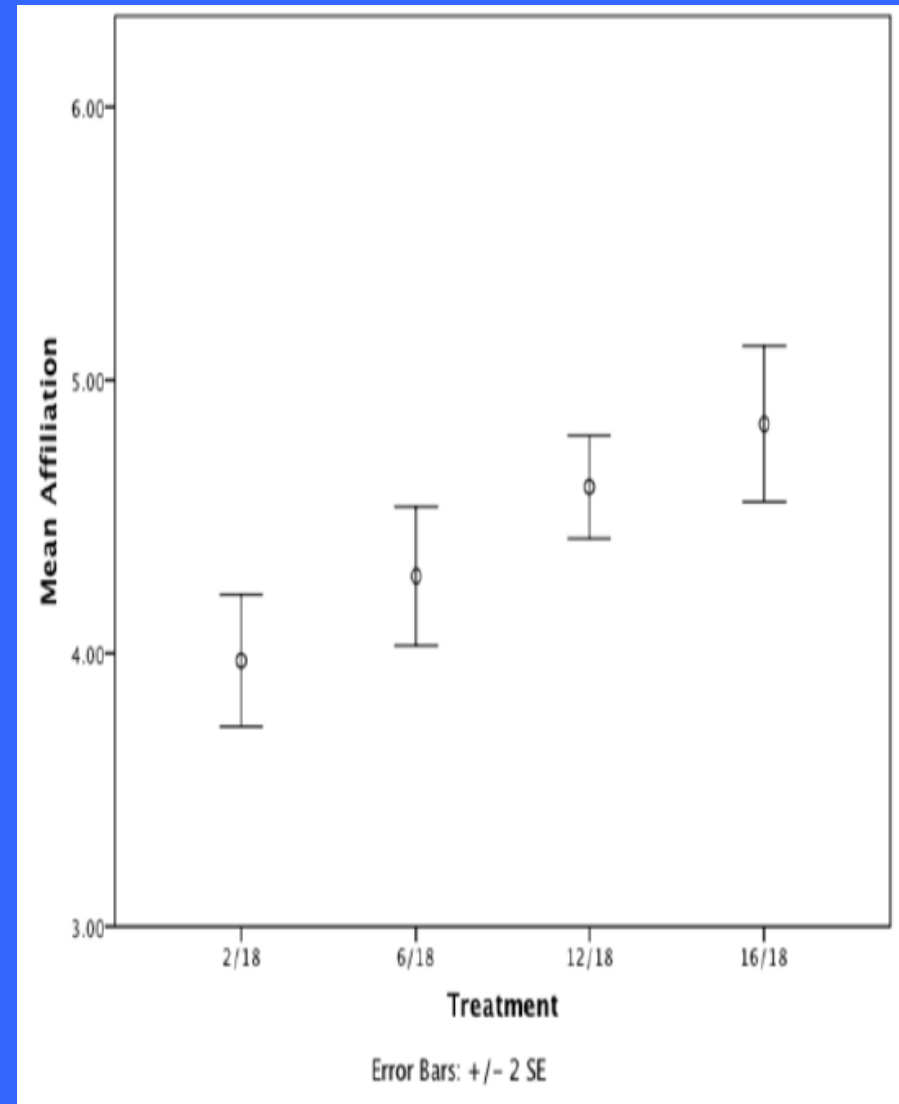
# What Makes Relationships Work?

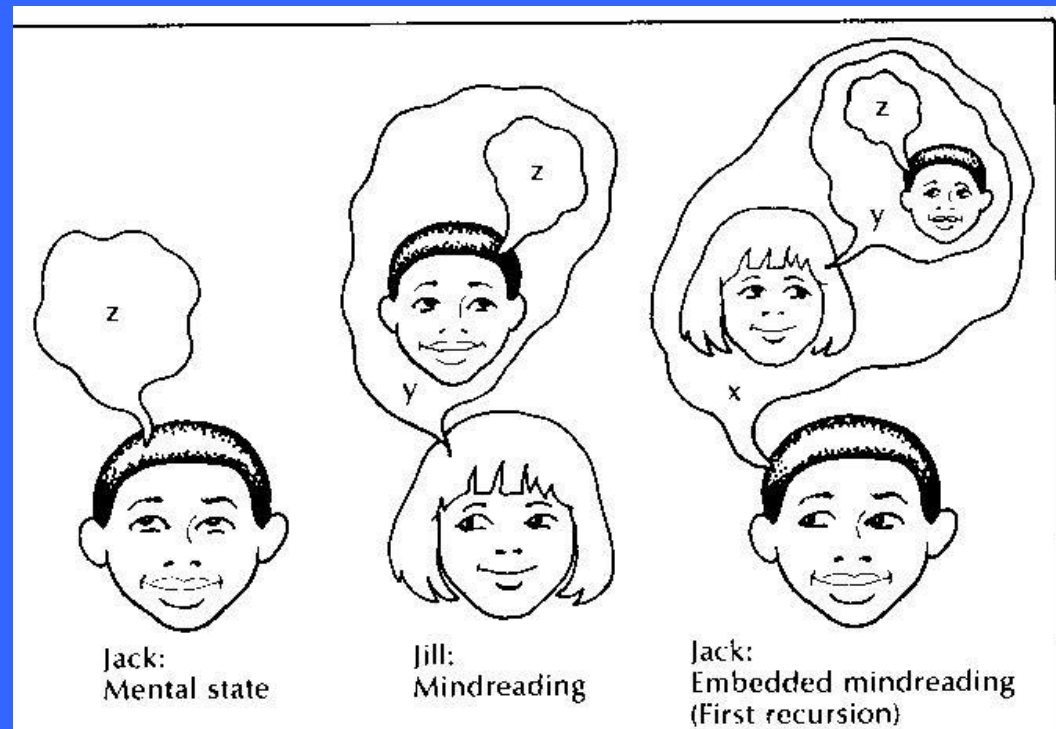Primate social bonds seem to involve two distinct components:

➢ An emotionally intense component [=grooming]

➢ A cognitive component [=brain size + cognition]

# The Limits to Intentionality...

A natural limit at 5$^{th}$ order intentionality:

"I <u>intend</u> that you <u>believe</u> that Fred <u>understands</u> that we <u>want</u> him to be <u>willing</u> to [do something]…"  [level 5]



Jack:
Mental state

Jill:
Mindreading

Jack:
Embedded mindreading
(First recursion)

# Cognitive Limits to Sociality?

- Achievable intentionality level indexed from stories
- 5th order seems to be the limit



Level of intensionality

- Intentionality correlates with size of support clique

  [clique size = no. of core intimate relationships]



Level of intensionality
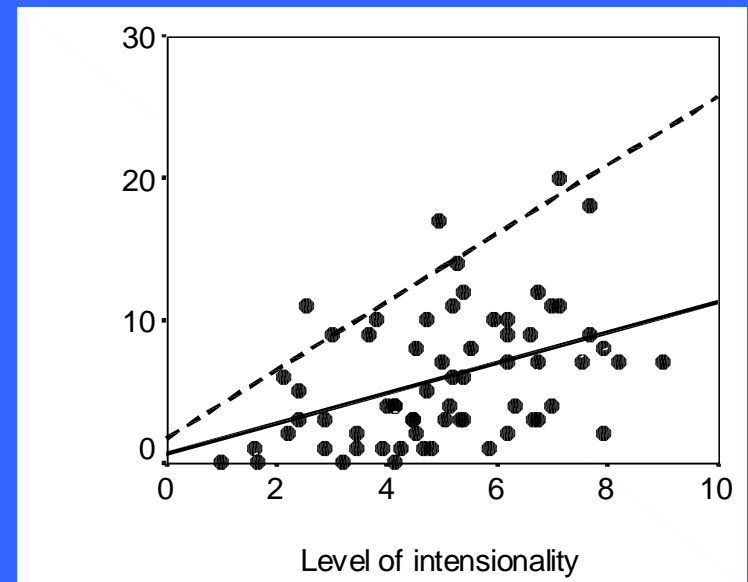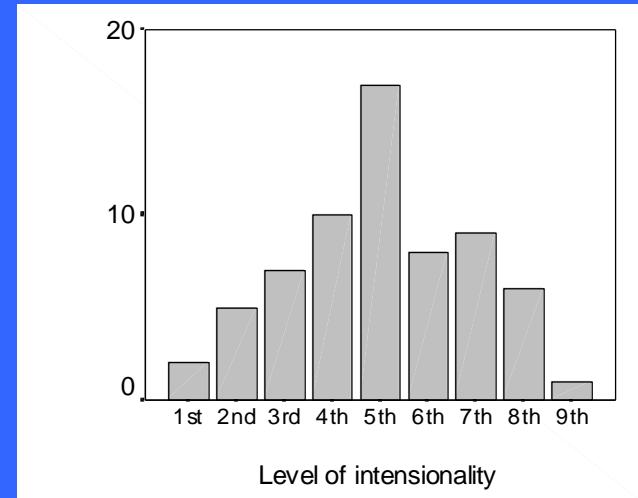
# Insights from Neuroimaging
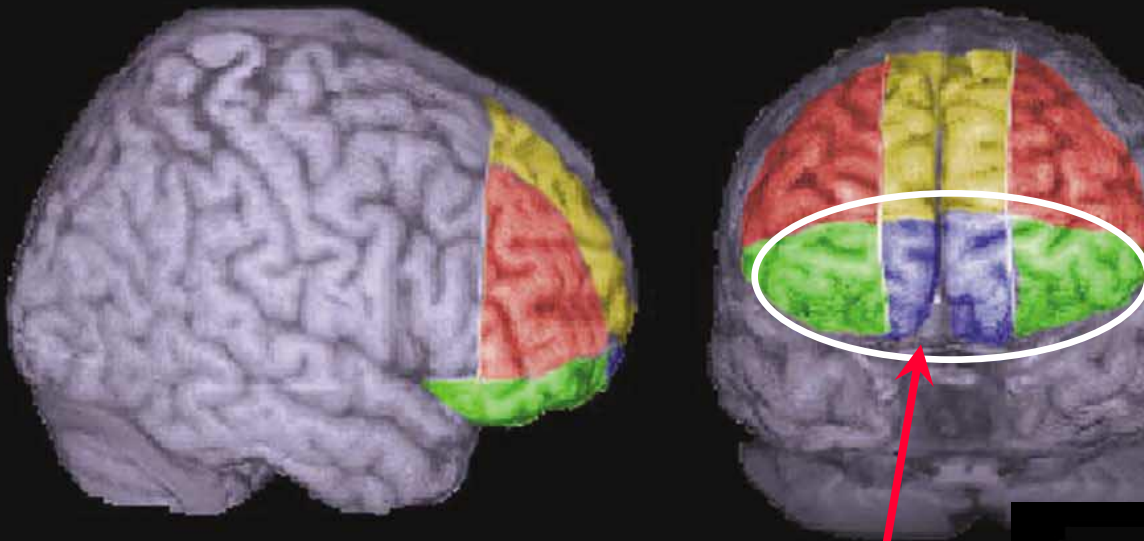
- In a stereological analysis of gross volume: best predictor of BOTH intentional competence and network size is orbitofrontal PFC volume

- In a fine-grained VBM (voxel) analysis: overlap of network size and intentional competence in the ventromedial PFC
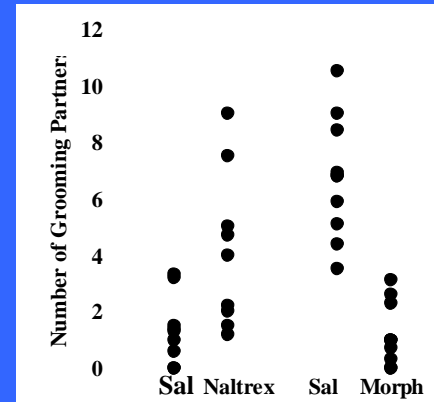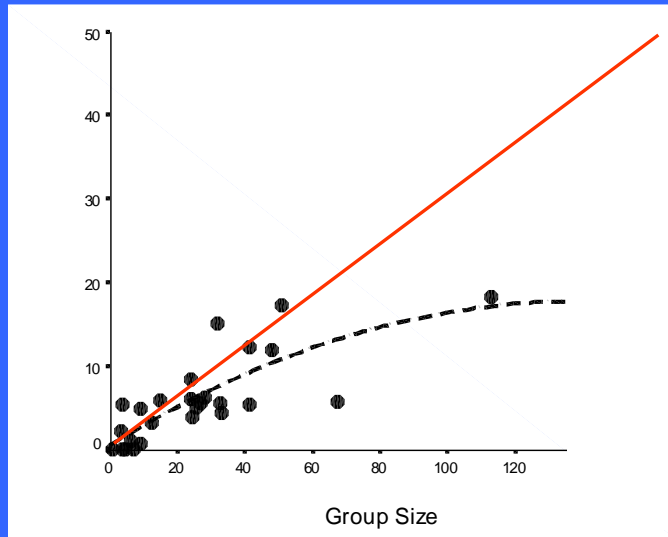
Intentionality
Social Network
Overlap
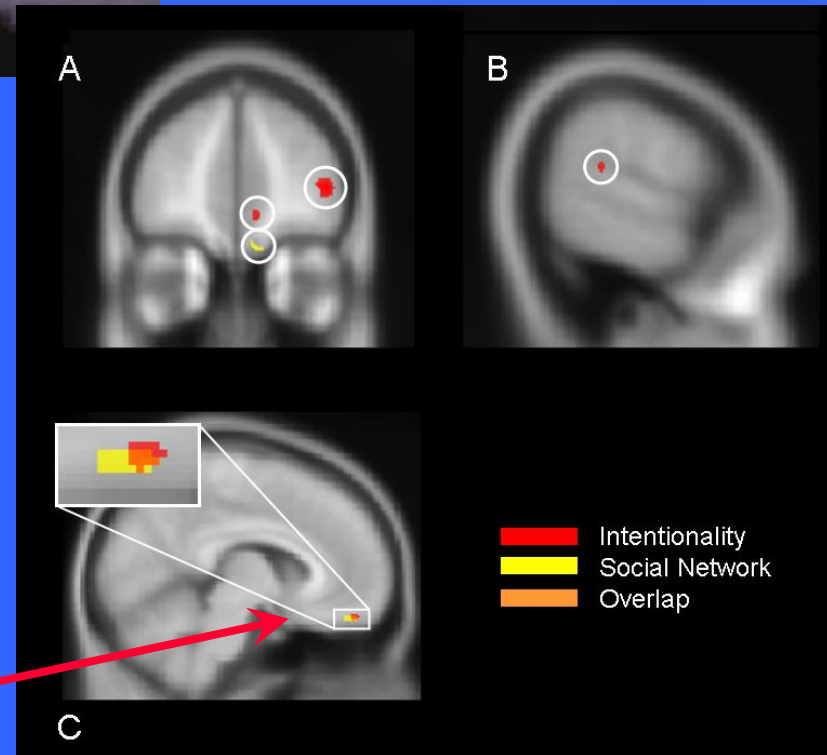
# Why Time is Important

- Grooming as the bonding agent in primates
- Grooming time is determined by group size

- …with an upper limit at about 20% of total daytime
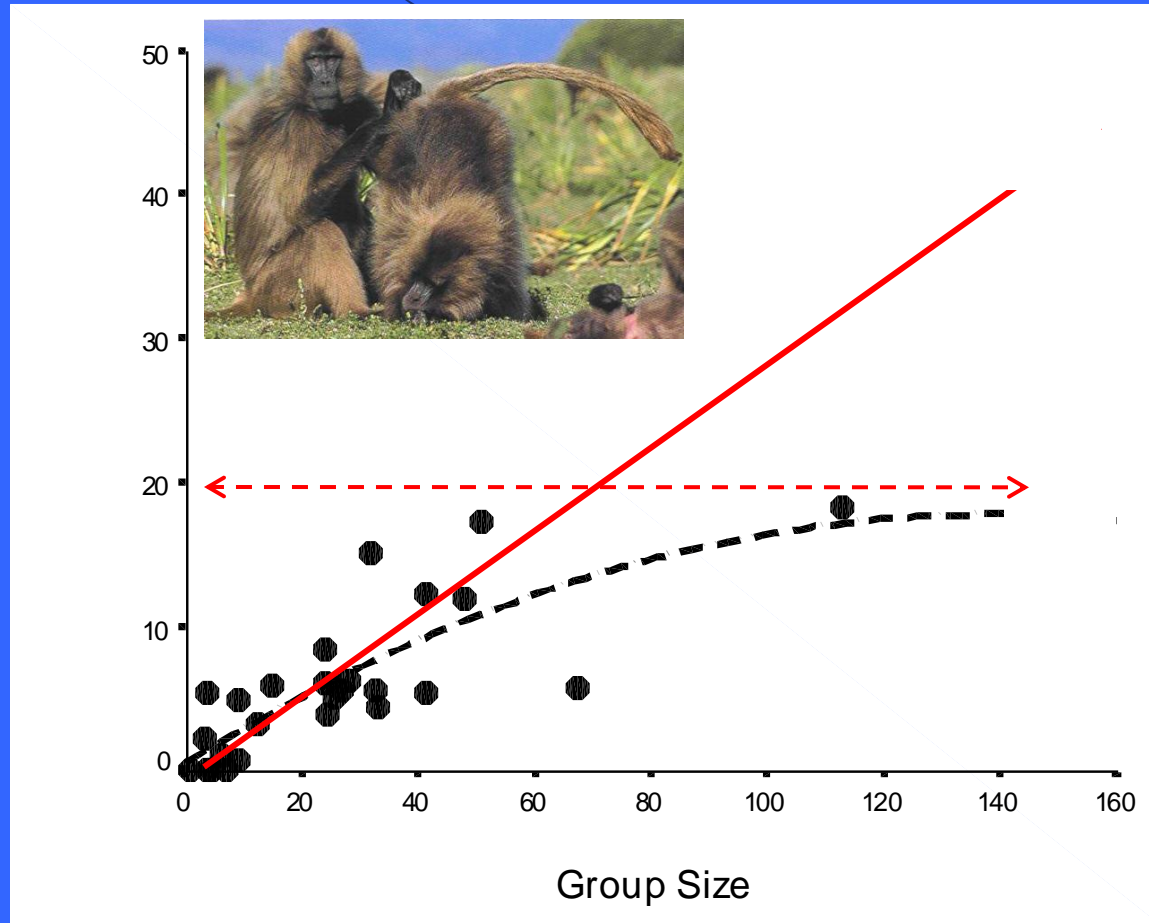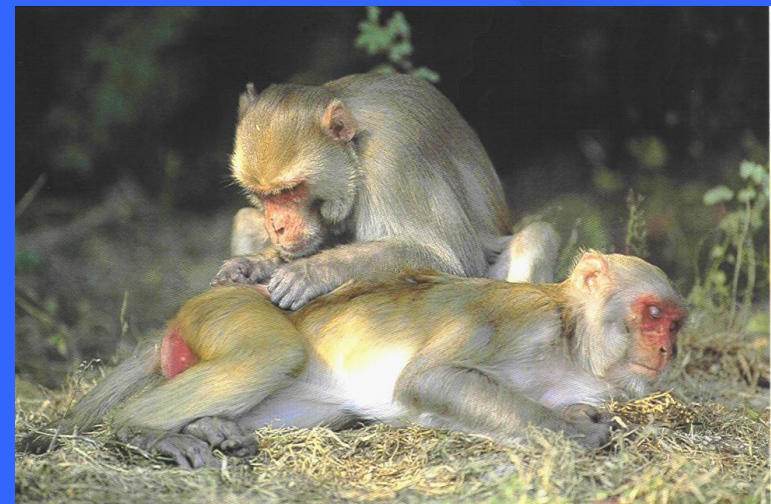
# How Grooming Works



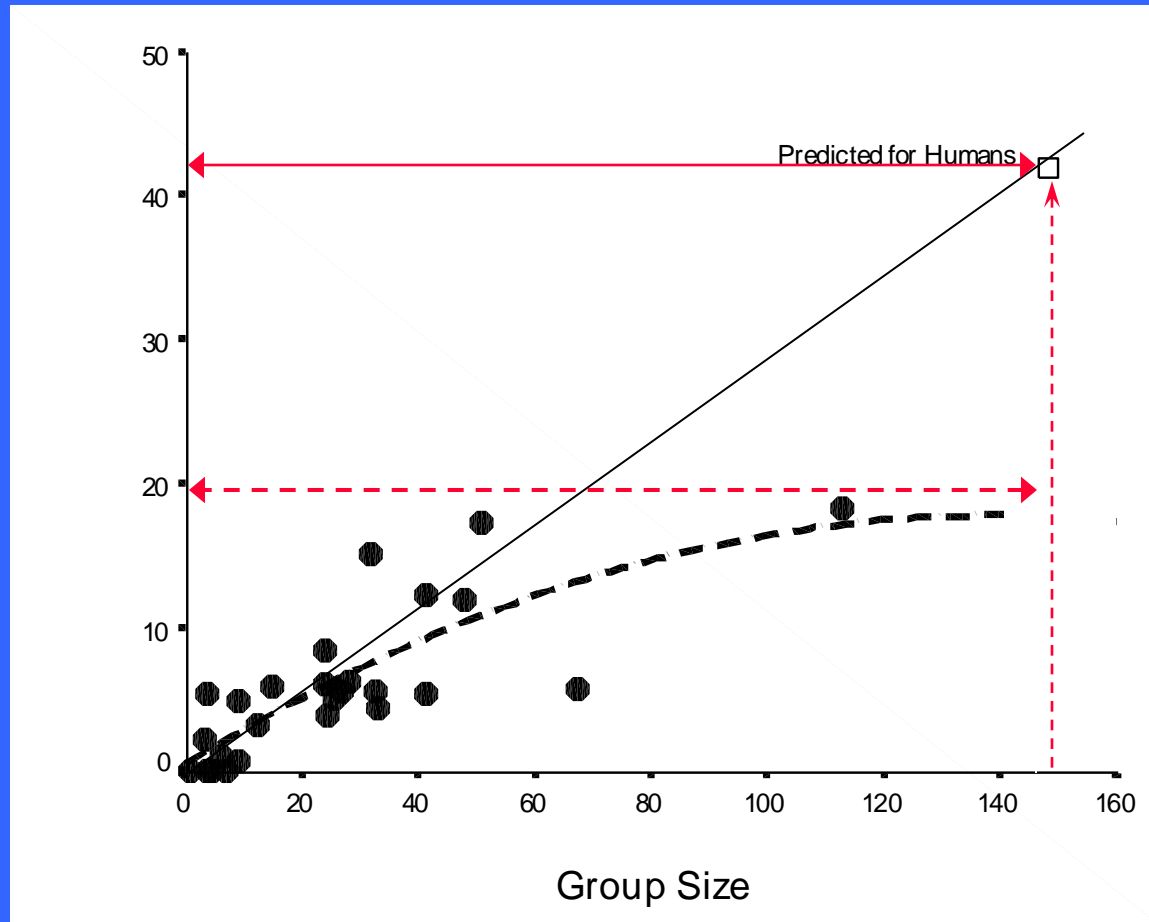An experimental study with monkeys

Opiates block social drive;

Opiate-blockers enhance social drive

- endorphins are relaxing

- They create a psycho-pharmacological environment for building trust?

# Grooming Time in Humans?

- If we bonded our groups using the standard primate mechanism

….we would have to spend ~43% of the day grooming



Predicted for Humans

Group Size

# Grooming Time in Humnas?

- In fact, we spend only 20% of our time in social interaction

  …..from a sample of 7 societies from Dundee to New Guinea

- How do we bond our super-large communities?



Predicted for Humans

Group Size
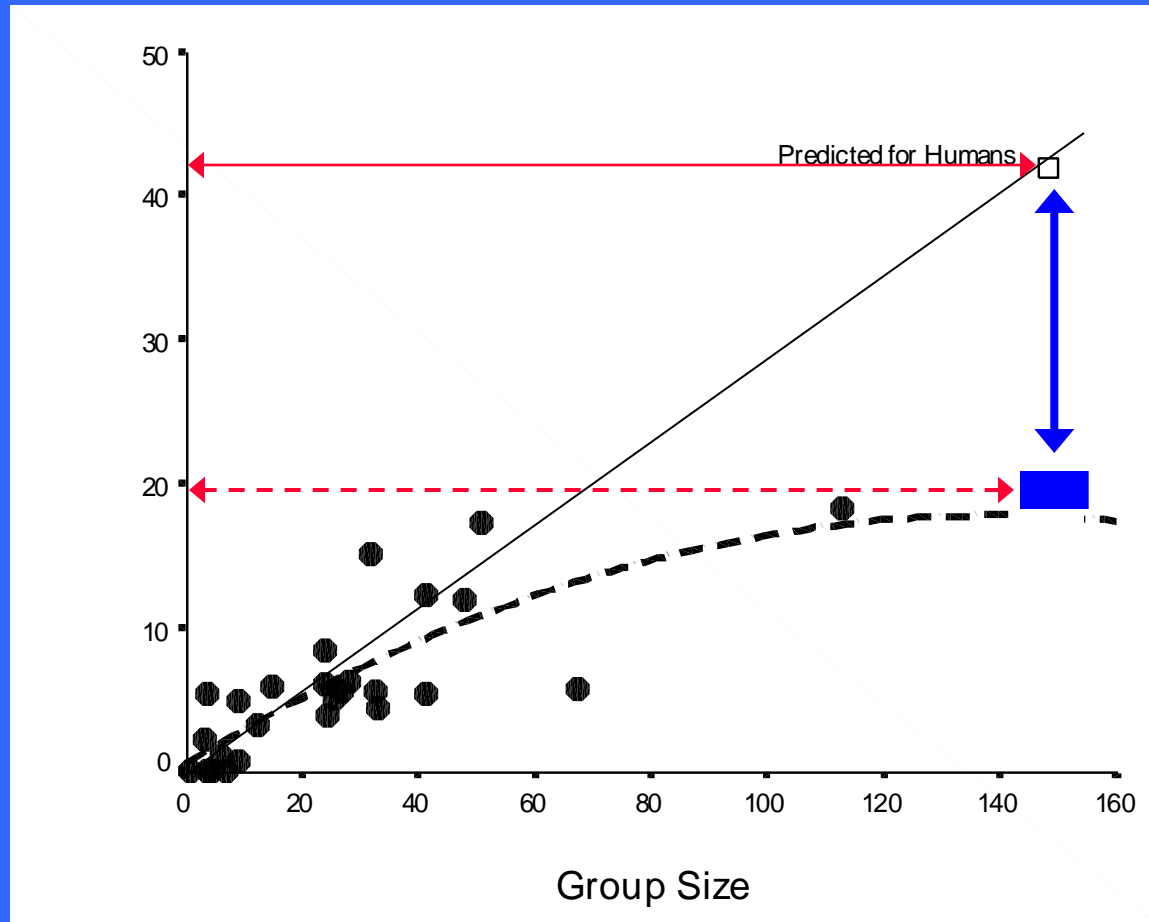
# Language to the Rescue…..?
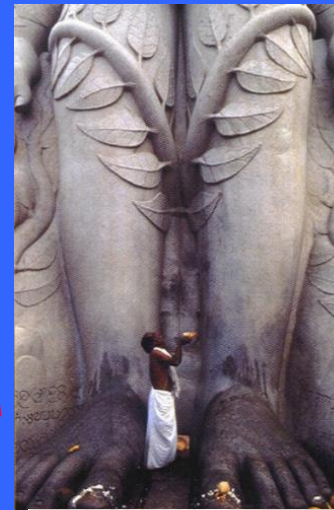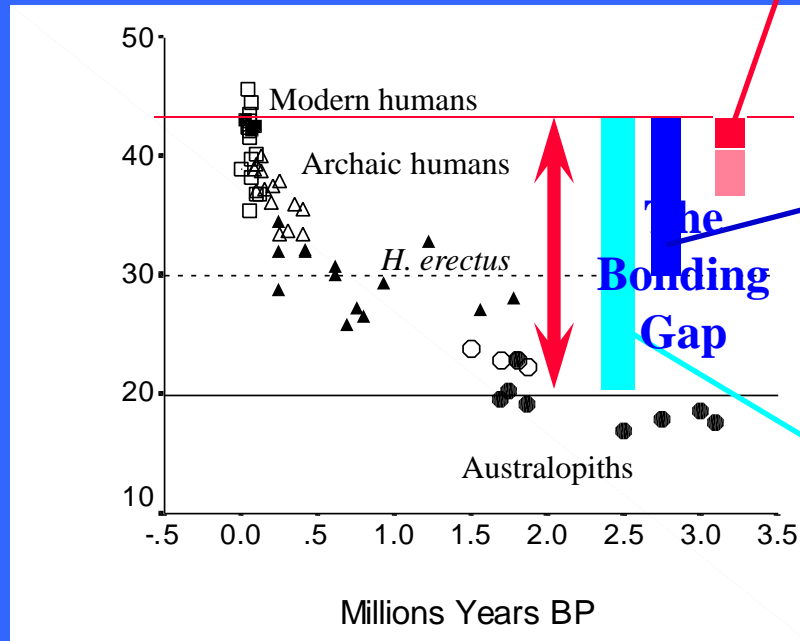
Natural Social Groupings

- Language allows:

  ➢ exchange of information about state of network

  ➢ larger broadcast group

  ➢ multitasking [talk and walk]

  ➢ reinforcing group membership

  ➢ reputation management



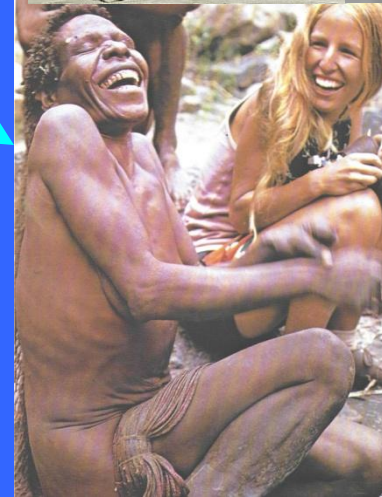….at Dartington's *Ways With Words*

BUT where's the endorphin surge?

# The Three Ways We've Bridged the Gap
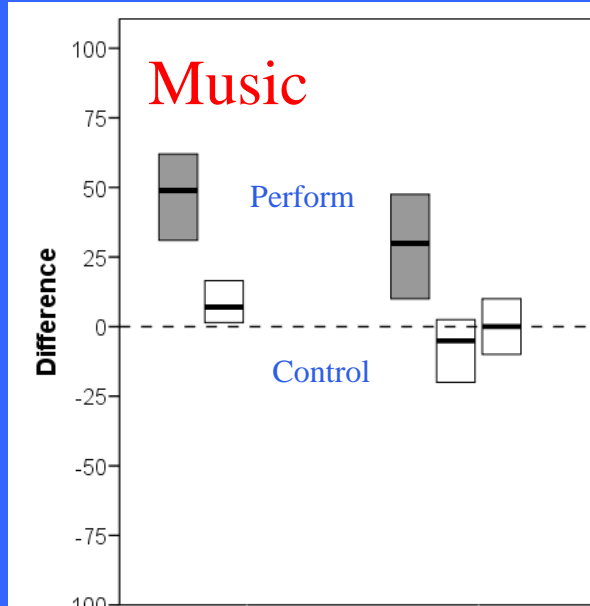


Religion and its rituals

Music and dance

Laughter
a cross-cultural trait
shared with chimpanzees

Modern humans

Archaic humans

*H. erectus*

The Bonding Gap

Australopiths

Millions Years BP

# Music and Laughter Trigger Endorphin Uptake

## Music

Perform

Control

Singing vs prayer

Drumming vs listening vs video

## Laughter

Comedy

Edinburgh Fringe

Neutral

Factual vs Comedy Videos

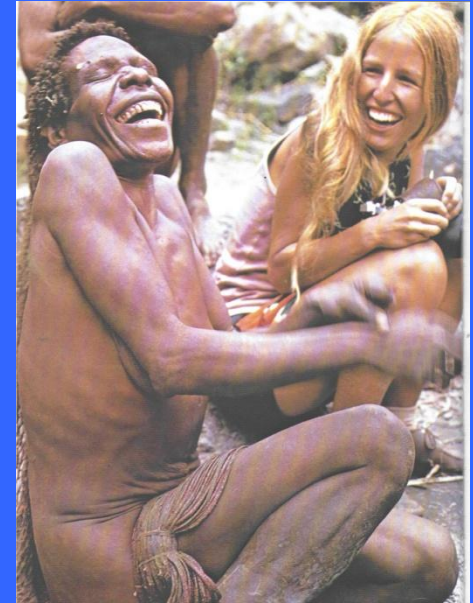## Procedure:
- pain test
- video/activity
- pain re-test

# Laughter
# The Best Medicine?



A human universal
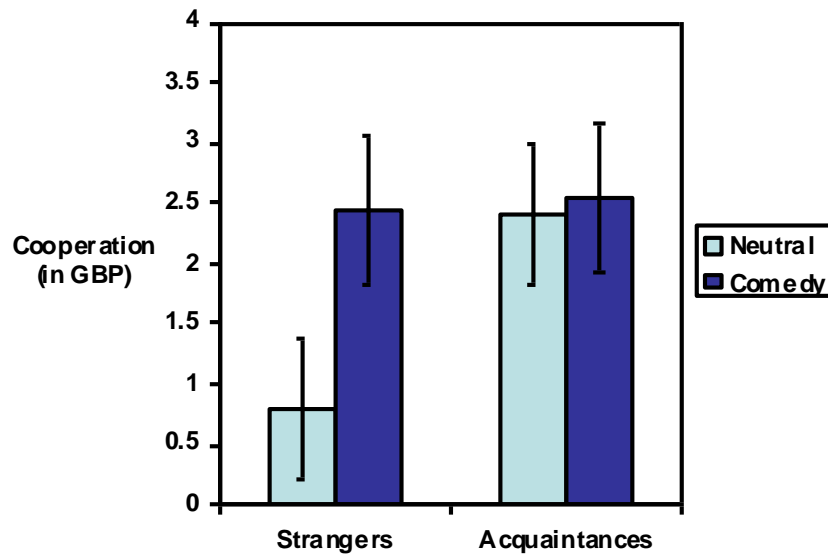
Laughter turns

strangers

into friends



Cooperation (in GBP)

- Neutral
- Comedy
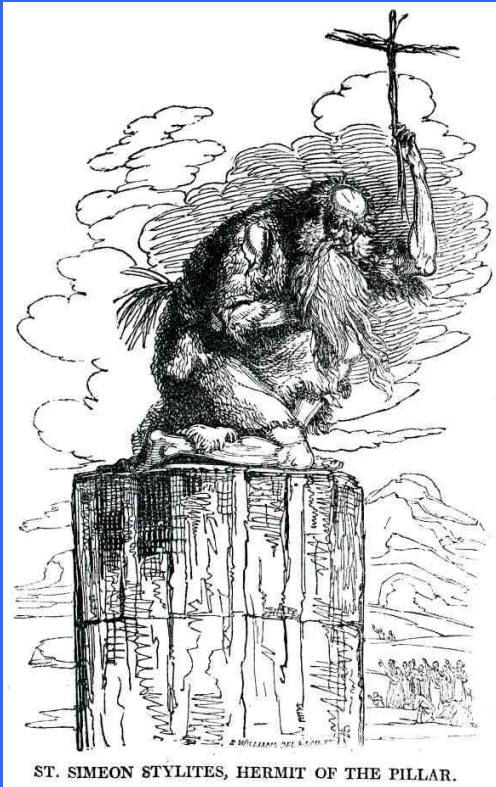
Strangers    Acquaintances

# Virtual Touch – the Ultimate Solution?

- Primate social bonds depend on the endorphin effect generated by physical contact

- Can we ever replicate that virtually?

- The Hug [from Carnegie Melon]
  - An interactive heat + vibration cushion

# So….why not just get your kicks on your own?
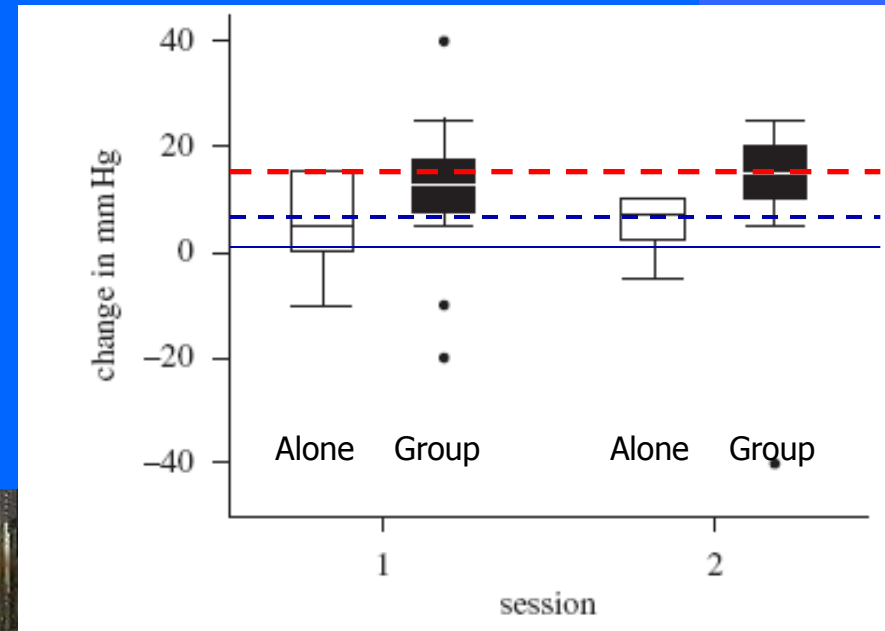
ST. SIMEON STYLITES, HERMIT OF THE PILLAR.

Plenty of people do….

…BUT doing it together seems to ramp up the effects

# Synchony Ramps up the Endorphins?



Change in pain threshold before and after 45 mins rowing work-out on ergometers in the gym:

Alone vs in a virtual boat



2007 Boat Race

Cohen et al (2010)

# The Big Problem for the Future?

The world has become global

and increasingly urbanized

…resulting in increasing disengagement and dissatisfaction

So, how do we create a more integrated, cohesive society?

Thanks ….!