



“Improving” your mind

Cognition enhancement

Cognitive functions:
mental states that underpin information-processing tasks such as attention, memory and selective forgetting.

“Improving” your mind

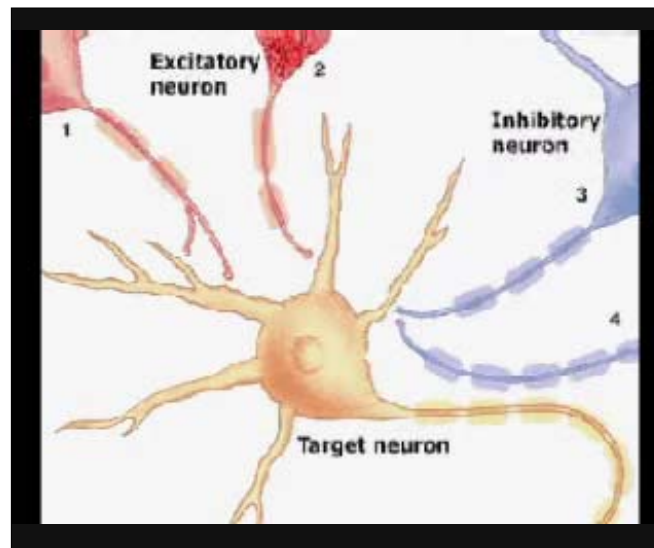
Cognition enhancement

- general: exercise & environmental enrichment
- correction of underlying factors (e.g. hypertension)
- nutrients
- herbal medicines (e.g. Ginkgo biloba, ginseng)
- pharmaceuticals
- psychological and learning strategies
- electromagnetic interventions

R Jones, K Morris, D Nutt “Cognition Enhancers” Foresight Brain Science, Addiction and Drugs Projects 2005

glutamate

The learning brain



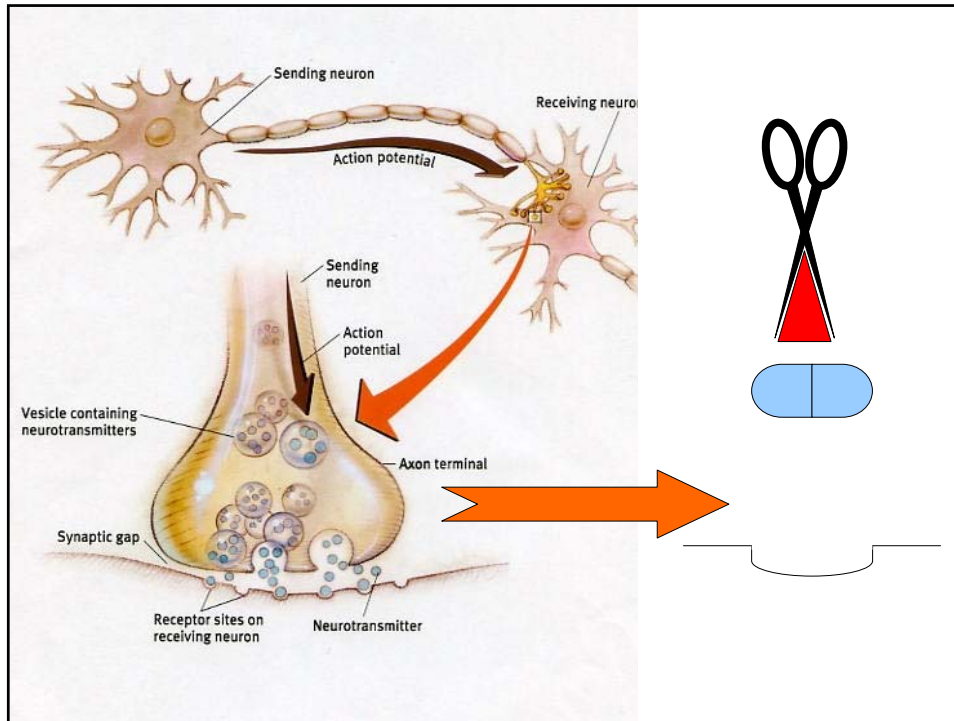
Pharmaceuticals

- **AD drugs (AChE inhibitors)**
- **Amphetamine**
response speed, retention & recall verbal memory
- **Methylphenidate**
- **Modafinil (unknown mechanism)**
alertness

Losing your mind

Dementia





Bending your mind

nootropics

- Why is our capacity for learning not optimised by evolution?
- Engineered “smart” mice: susceptibility to pain, inability to forget
- “Memory men” – inability *not* to learn

nature

Vol 438/24 November 2005 doi:10.1038/nat

LETTERS

Neural measures reveal individual differences in controlling access to working memory

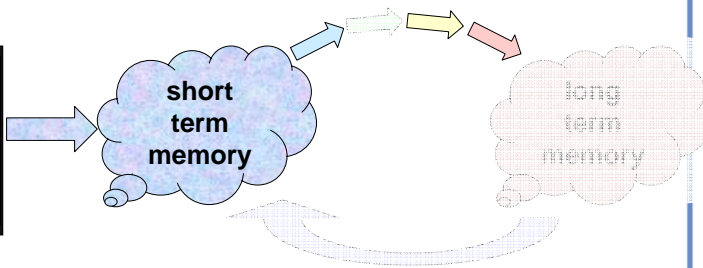
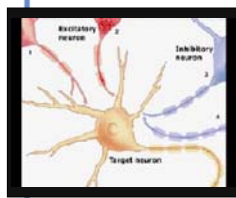
Edward K. Vogel¹, Andrew W. McCollough¹ & Maro G. Machizawa¹

Not higher capacity – “it’s about the bouncer”

Bending your mind

nootropics

- Memory erasers



Bending your mind

nootropics

The great leveller or deepening the divide?

Therapeutic or lifestyle drugs?

Neurobiofeedback



Neurobiofeedback



Scientific American Mind

Neurobiofeedback



Bending your mind nootropics

“Trade-offs” between enhancement of one function and impairment of another seem likely, and are already noted in normal brain functioning.

R Jones, K Morris, D Nutt
“Cognition Enhancers” Foresight Brain Science, Addiction and Drugs Projects 2005

Cognition-enhanced classroom



Recent reviews and summaries

Link to DTI Foresight program report on cognitive enhancers:

http://www.foresight.gov.uk/Brain_Science_Addication_and_Drugs/Reports_and_Publications/ScienceReviews/Cognition%20Enhancers.pdf

**Also, the thinktank DEMOS produced a collection of essays
“Better Humans”
to which Danielle Turner & Barbara Sahakian contributed
“The cognition enhanced classroom”**

http://www.demos.co.uk/BH7_pdf_media_public.aspx

or email martin.westwell@pharm.ox.ac.uk

The Institute for the Future of
the mind

