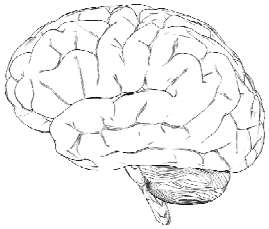
Psychology 101

Intro Bio Cog Psych
University of British Columbia
Dr. Michael Souza

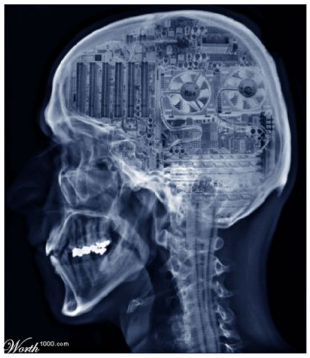


Lecture 09a (06 Jun 2012)
An introduction to consciousness
Attention and neglect

Consciousness

Subjective experience of the mind and of the external world

Awareness and reflection



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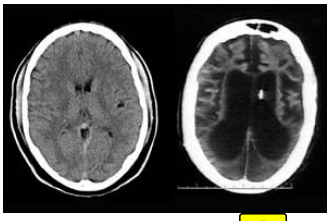
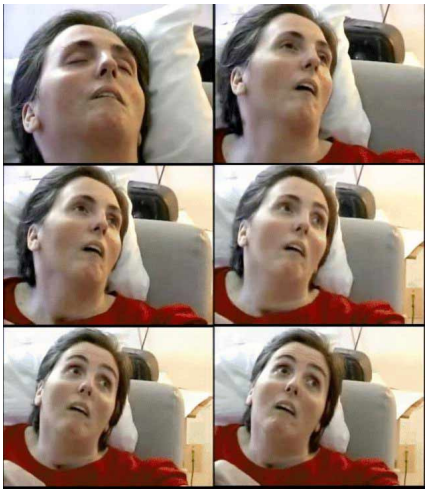
The case of Terry Schiavo





Persistent vegetative state

Picture: http://news.bbc.co.uk/2/hi/americas/4398131.stm
http://libertytothecaptives.net/terri_schiavo_cognitively_able.html
http://en.wikipedia.org/wiki/Terri_Schiavo_case

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Conscious, aware but can we communicate with them?

Locked-in syndrome

Picture: http://www.guardian.co.uk/sport/2008/sep/09/usopentennis.tennis
http://www.cfbt.org/bn/page.asp?page=Janet_Locke&subsection=Meet_some_of_our_teachers&section=Teacher_Recruitment

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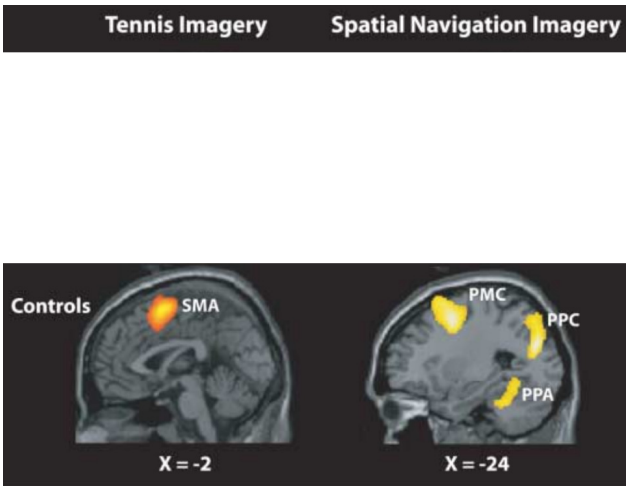
Breaking through and establishing communication!



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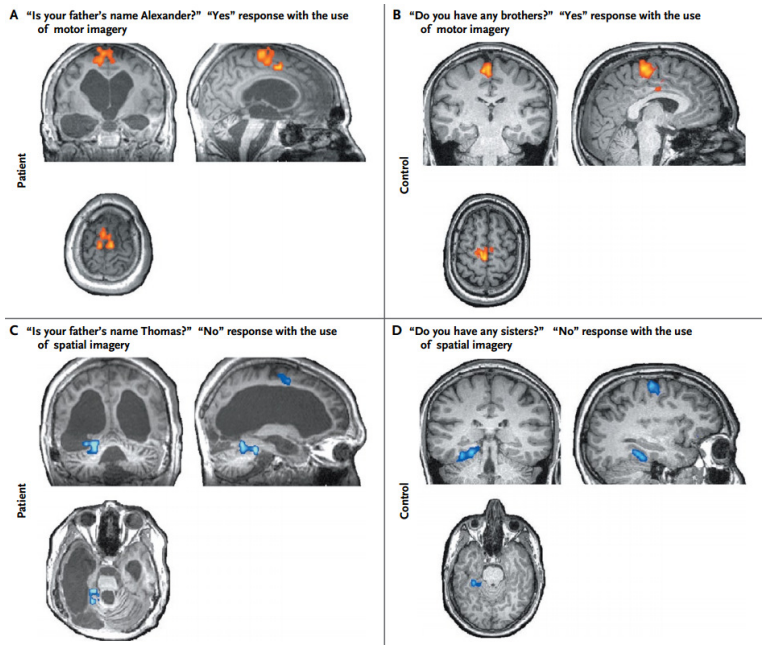
Owen et al. (2006), Science, 313, 1402



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Monti et al. (2010), New Engl J Med, 362, 579-89

What is attention?

"Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others…"

-William James

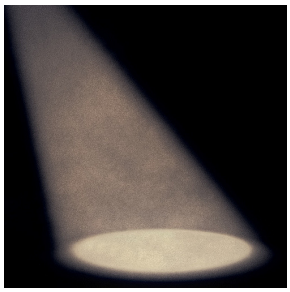

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Image: http://willy.boerland.com/myblog/in_case_spotlight_is_not_working_on_your_mac

Some properties of attention

Intentionality

Directing attention overtly or covertly

Unity

Resistance to divided attention

Selectivity

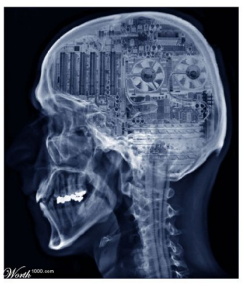
Enhancing or ignoring

Cocktail party effect

Transience

Trade-off with sustained attention

Transience taken too far?



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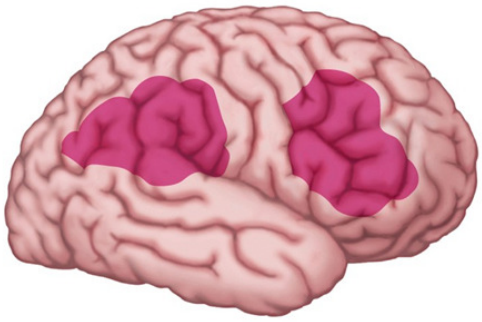
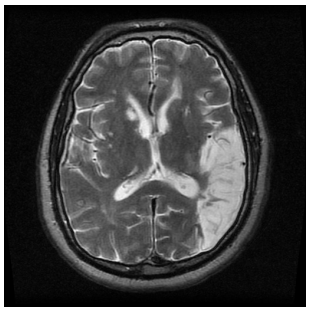
The right hemisphere, attention and neglect





Picture: Gazzaniga's Cog Neuro (3rd ed)
Image: http://trialx.com/curetalk/wp-content/blogs.dir/7/files/2011/05/diseases/Hemispatial_Neglect-1.jpg

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Line bisection task

10

Line cancellation task

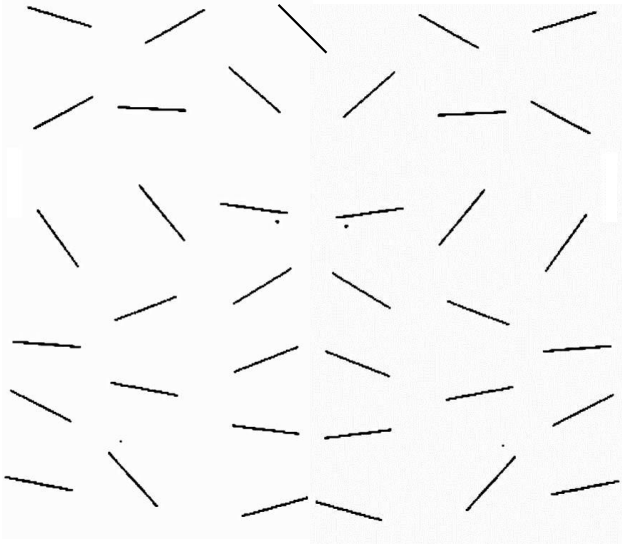

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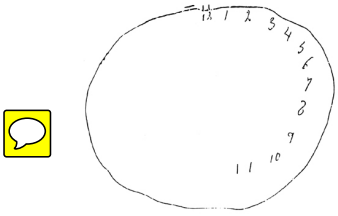
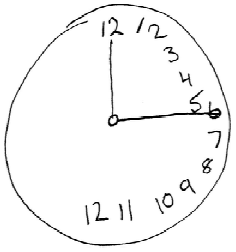
Image courtesy of M. D'Esposito

Drawing (1)





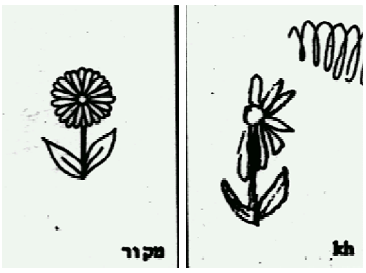


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Image courtesy of M. D'Esposito

Drawing (2)

13

Image courtesy of M. D'Esposito and Gazzaniga's Cog Neuro (3rd ed)

Writing

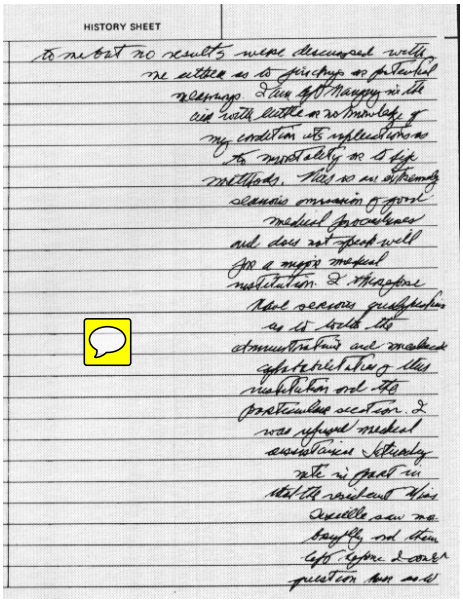

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Image courtesy of M. D'Esposito

Visual judgments

Chimeric faces

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Image courtesy of M. D'Esposito

Recall and visual imagery

Piazza del Duomo in Milan

Piazza del Duomo in Milan

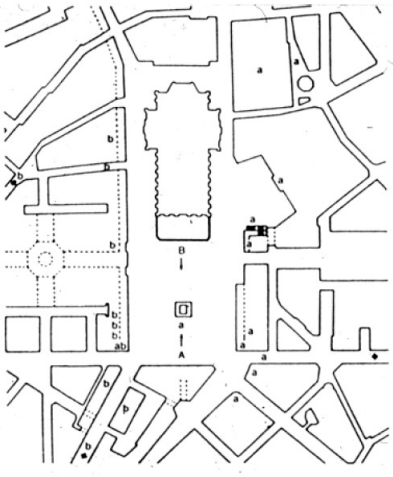

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Image courtesy of M. D'Esposito

A theory of spatial attention

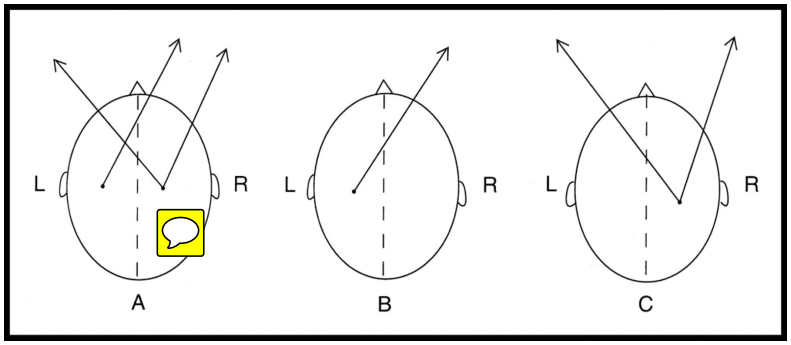

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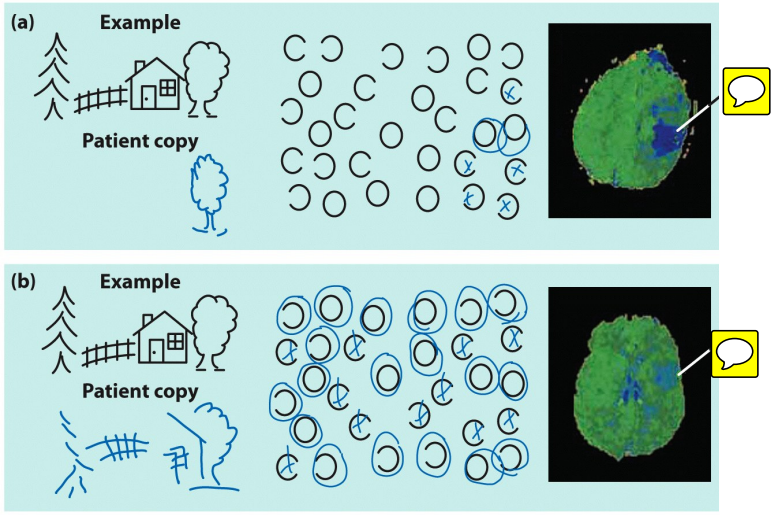
Image courtesy of M. D'Esposito

Lesion location and form of neglect



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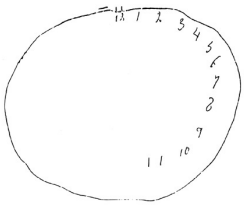
Picture: Gazzaniga's Cog Neuro (3rd ed)

Lecture summary

Neglect is a neurological disorder caused by damage to the right hemisphere's attentional network. It results in an inability to attend to the left side of space

Interestingly enough, some neglect patients can process information in the neglected field to some degree



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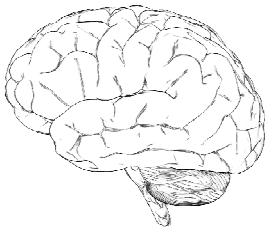
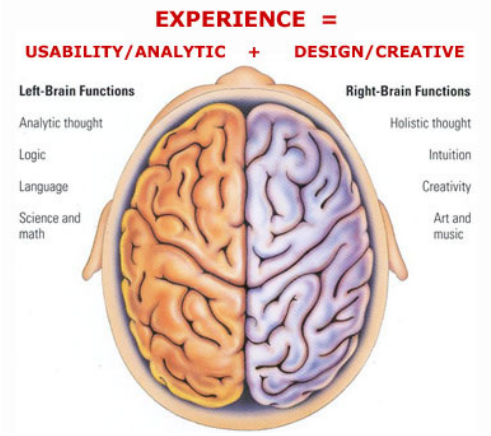


Lecture 09b (06 Jun 2012)
Split-brain patients and hemispheric specalizations

Cerebral asymmetries and pop culture



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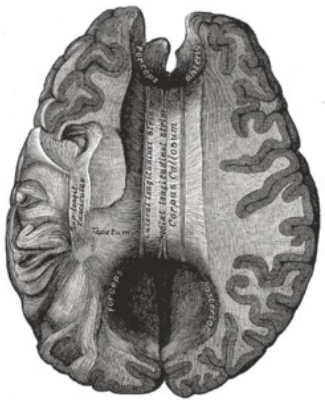
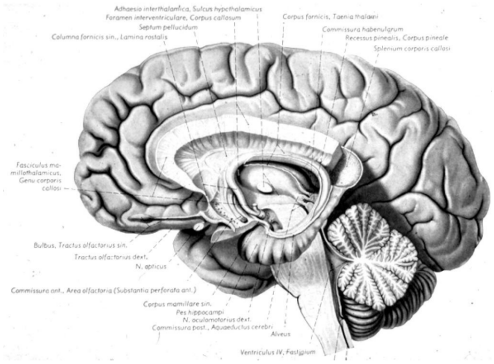
Picture: http://blogs.transparent.com/chinese/left-brain-right-brain-middle-language-%E4%B8%AD%E6%96%87/

The corpus callosum





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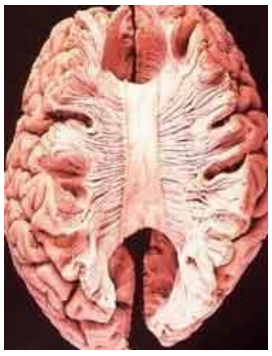
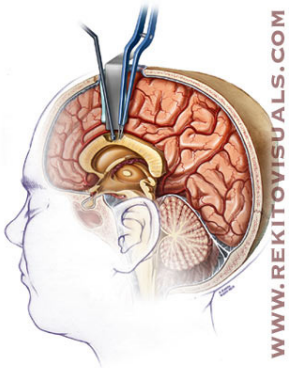
Picture: http://en.wikipedia.org/wiki/Corpus_callosum and courtesy of M. D'Esposito

Callosotomy





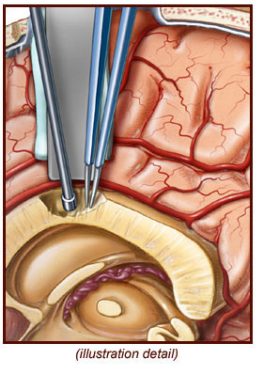


Image: http://www.rekitovisuals.com/corpuscallosotomy.html
http://mybrainnotes.com/brain-consciousness-right.html

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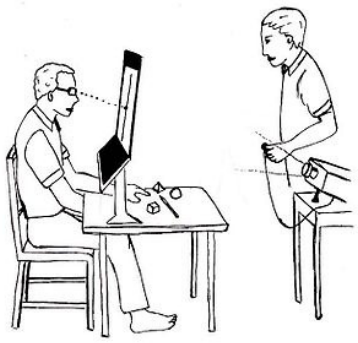
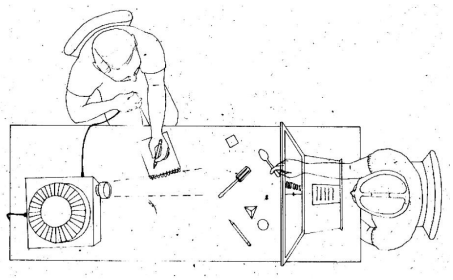
Tachistoscopic presentation





Roger Sperry and the Nobel Prize in Medicine (1981)

Picture: Courtesy of M. D'Esposito

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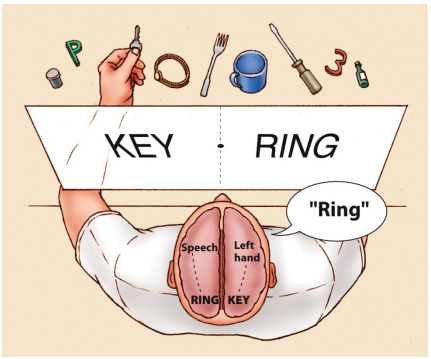
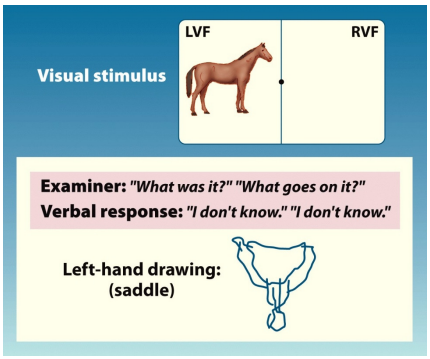
Testing what each hemisphere knows





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Picture: Gazzaniga's Cog Neuro (3rd ed)

Alien or Anarchic Hand Syndrome

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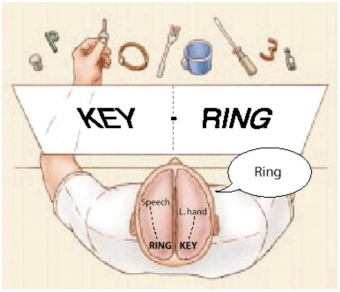
Picture: http://www.bbc.co.uk/news/uk-12225163

Section summary

Each cerebral hemisphere is specialized to process certain types of information. This bias is usually challenging to detect in a normal brain because the hemispheres exchange information so quickly

Split brain patients offer researchers an opportunity to study these specializations. It turns out that interesting differences in knowledge (and whether you are conscious of it or not) come out in these patients.



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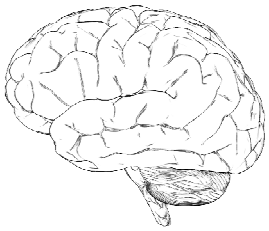
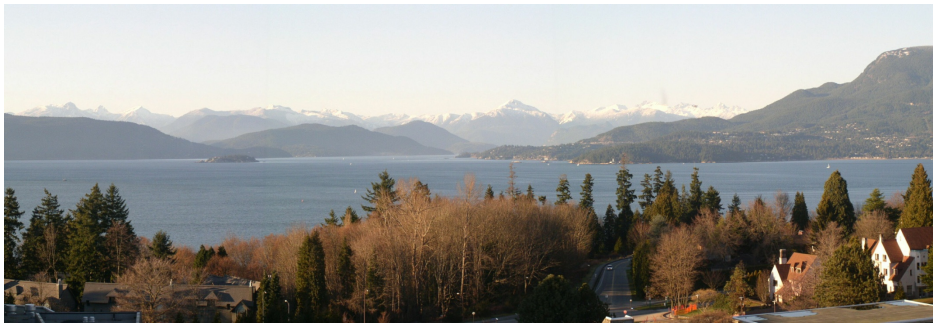


Lecture 09c (06 Jun 2012)
The basics of sleep



Sleep is a necessary biological function

We all sleep

24-hour cycle

Dolphins/whales

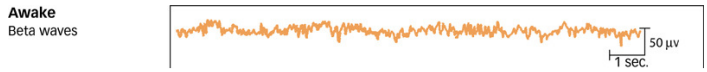
Fractionating the sleep process

EEG recordings during sleep

5 relatively distinct stages

30

Picture: http://www.musicianbrain.com/methods.php#index



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Picture: Schacter's Psychology (2nd ed)

The paradox of REM sleep

REM sleep

High frequency brain waves

Darting eye movements

Increased heart rate, breathing rate

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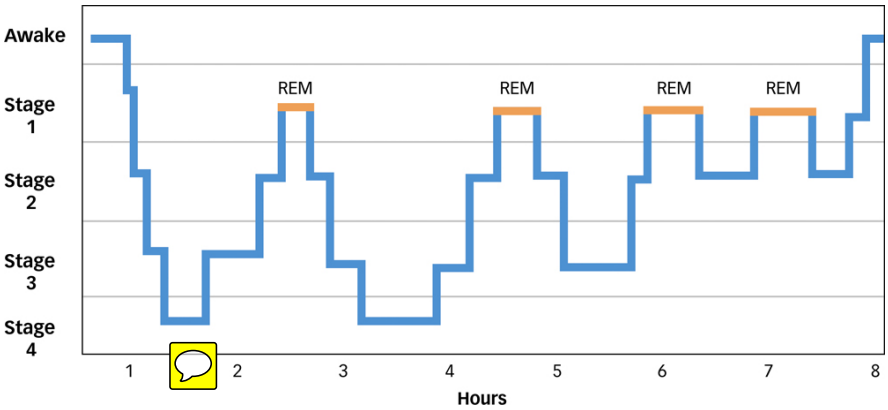
Progressing through a night's sleep



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Picture: Schacter's Psychology (2nd ed)

Functions of sleep

Evidence from deprivation

Bodily regulation

Attention and performance

Learning and memory

Emotion regulation

Short-term and long-term effects…

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Picture: Schacter's Psychology (2nd ed)

A small selection of sleep disorders

Insomnia

Sleep apnea

Narcolepsy

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Dreaming

Five major characteristics

Intense emotion

Illogical thought

Vividness

Uncritical acceptance

Difficulty with remembering

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Picture: http://www.ring-themovie.com/

Why do we dream?

Freud and the unconscious

Activation-synthesis model

Memory consolidation

37

Picture: http://science.howstuffworks.com/environmental/life/human-biology/lucid-dreaming.htm

Final thoughts on sleep

Sleep schedules change over our lifetime

Notable individual differences

Many psychological disorders associated with sleep issues

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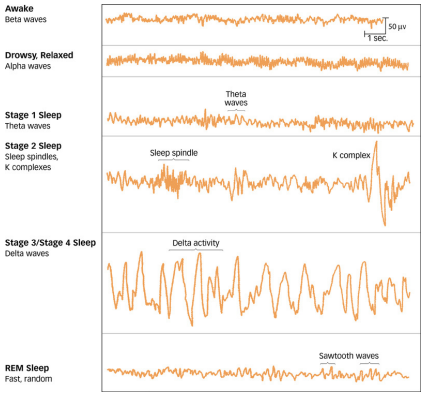
Picture: http://www.facebook.com/pages/Jerry-Springers-Final-Thought/74356839755

Section summary

Sleep is a necessary biological function and we spend roughly 1/3 of our lifetime in this state

The various stages of sleep are characterized by distinct EEG signatures (Stages 1-4 & REM)

There are several functions of sleep and there are theories as to why we dream during sleep...



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Next class: Language and thinking, course conclusion