

COGS 17 * HOMEWORK 3

SLEEP & AROUSAL	(HINT: “vs.” in definition indicates that <u>two</u> contrasting terms are required)
	EEG while awake/active, 18-24 Hz, Very high freq, very desynchronized
	EEG while awake/relaxed, 8-12 Hz, Like above, somewhat more sync'd
	EEG during Sleep I, 4-7 Hz, Lower freq, still quite irregular, more sync'd
	EEG during Sleep 3(&4), <4 Hz in less (&more) than 50% , Very low freq, very high voltage, very sync'd
	During Sleep 2, 2 types of intermittent bursts of high freq or voltage, as brain settles into deeper sleep
	Another term for Sleep 3 & 4, re: its low frequency EEG and highly synchronized activity
	Stage of Sleep associated with dreams
	Another name for above due to its contradictory nature (active, desynch'd brain, but paralyzed body)
	Condition in which Pons suppresses motor signals sent to Cord, so muscle action prohibited
	Sequence of activation in Pons => (Lateral) Geniculate => Occipital Cortex that initiates dream sleep
	Excitatory neurotransmitter released by above to desynchronize brain
	Duration (# minutes) of one sleep cycle through Stages 1, 2, 3, 4, 3, 2, “Dream” sleep
	Condition after sleep deprivation in which system attempts to enter “Dream” sleep more frequently
	Location in Hypothalamus of Circadian Clock
	“Time Giver”, a stimulus, such a bright sunlight, that can reset Circadian Clock
	Path of Optic Nerve collateral that connects special visual receptors in eye directly to clock
	Gland that produces a hormone that impacts on Hypothalamus to increase sleepiness
	The hormone mentioned above, which can also be taken as a sleep aid.
	Forebrain structure (anterior & dorsal to Hypothal) that modifies arousal in cortex
	Neurotransmitter released by above that increases cortical arousal
	Neurotransmitter released by above that decreases cortical arousal
	Chemical that builds up in cells, released as NT, inhibits release of above excitatory NT, promotes sleep
	Stimulant that blocks receptors for above, allowing continued cortical arousal
	Nucleus of Hypothalamus critical in initiating sleep (also assesses & regulates body temperature)
	Structure in Pons whose functions include shutting off REM sleep
	Neurotransmitter released by above nuclei; very low in Slow Wave Sleep, very high at the end of REM
	“Net” from Medulla & Pons, for widespread arousal of Forebrain, esp Thalamus and Basal Forebrain
	Two neurotransmitters released by above, to alert brain
	(“Dark Blue Place”) An arousal center, active during new tasks , vigilance, memory formation
	Neurotransmitter released by above, absent during dreams; Amphetamines are antagonists for this NT
SEX	
	Effects of reproductive hormones on anatomy <u>vs.</u> on behavior
	Class of reproductive hormones found in greater proportion in Females <u>vs.</u> in Males
	Sex chromosomes typical of Females <u>vs.</u> Males, which help determine gender
	Systems of ducts in fetus that become part of internal reproductive organs of Males <u>vs.</u> Females
	A Male hormone, produced by testes, responsible for development of Male anatomy and behavior
	Another Male hormone that inhibits development of Female system of internal ducts
	Enzyme produced by “switch” on Male chromosome that leads to the development of gender
	Condition in which genetic-male fetus does not respond to Male hormones and thus develops as Female
	Condition in which fetus lacks Y Chromosome, develops internally & externally as infertile Female
	A Female hormone, (similar to Testosterone) that, once inside fetal cells, promotes <u>Male</u> development
	Chemical in fetal blood that prevents mother’s hormones from entering fetal cells and masculinizing fetus
	Area of Hypothalamus w/receptor sites for Male hormones, esp active during Male sexual behavior
	Above includes this nucleus which is 2.5X larger in Males than Females
	Part of above nucleus that is smaller in both Females and Homosexual Males
	Area of Hypothalamus w/receptor sites for Female hormones, esp active during Female sexual behavior
	Fibers connecting cortical hemispheres which is thicker in Females, who are thus less-lateralized
	Hormones released by Hypothalamus causing Anterior Pituitary to release its reproductive hormones
	Two Gonadotropic hormones that stimulate development and behavior in both genders
	Male hormone released by <u>Female</u> Adrenal Glands, stimulates secondary hair growth & sexual behavior
	Area near Basal Forebrain associated with the sensation of sexual pleasure
	Neurotransmitter released by above area in response to sexual stimulation
	Hormone released by Posterior Pituitary at time of <u>orgasm</u>
	Hormone released by Anterior Pituitary for refractory period in Males and milk production in Females
	Part of Tegmentum active especially in Females during sex
	Neurotransmitter released by above area, including to suppress potential for pain

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EMOTION	
	Theory: Emotion is an after-the-fact label we give to arousal and assoc'd behavior
	Theory: Once threat perceived, emotion is simultaneous ANS activity & subjective experience
	Theory: Emotion is bi-directional interaction between cognitive appraisal and autonomic/limbic activity
	Key Limbic structure implicated in interpreting valenced situations and coordinating an emotional response
	Area of above, when stimulated, promotes attack
	Area of above responsible for coordinating Startle Reflex
	Areas of above involved in Conditioned Fear and subsequent enhancement of Startle Reflex
	Degenerative calcium buildup in Amygdala that results in deficits in interpreting facial expressions
	Area of cortex, w/reciprocal connections to Amygdala, for social evaluation, self-control, C/B analysis, etc
	Famous patient with damage to above area from accident during building railway
	Capacity to attribute mental states to others, prob. mediated by late-developing Prefrontal-Amygdala links
	Ventral section of Prefrontal Cortex specialized for social evaluation
	Prefrontal assessment of negative situation that one is powerless to affect; can lead to Parasymp-rebound ulcers
	Medial area of cortex involved in facial expression, mediates Amygdala and Prefrontal interaction
	Result of damage to above area including deficit in ability to spontaneously smile
	Result of damage to Motor Cortex for facial region that involves in deficit in voluntarily showing teeth
	Common task used in lab to assess risk aversion
	NT whose low turnover level (per metabolite 5-HIAA levels) assoc'd w/impulsiveness, aggression & depression
	Excitatory NT associated with enhanced Startle Reflex
	Inhibitory NT, admits Cl ⁻ ions into cells, whose agonists (Valium, Xanax) are used to combat anxiety
LEARNING & MEMORY	
	Rule of Conditioning: Event assoc'd with + (vs. -) reinforcement will (vs. not) be repeated
	Developed association between stimuli, especially involving an unconditioned response
	Developed association between stimulus and response
	Co-activated neural circuits presumably involved in learning and retrieval of associations
	Physical changes in cells involved in above, associated with learning
	Area of brain in which above process has been well studied/described
	Type NT involved in above
	Type of receptor site for above NT that is ionotropic and easy to stimulate
	Type of receptor site for above NT that is difficult to stimulate, & often requires above to first hypo-polarize cell
	Type of ion that blocks ion gate of above receptor site
	Type of receptor site that above can change into, after repeated co-activity in a circuit
	One kind of change to dendrite structure that results in an increase in surface area and thus of available sites
	Act by post-synaptic cell membrane that results in division of "active zone" of pre-synaptic terminal
	DNA transcribed to RNS translated to Protein production that increases likelihood of neural activity
	Rare (except in Hippocampus) generation of new neurons associated with learning
	Recall of specific locations, spatial judgments of familiarity
	Area of brain in which above process has been well studied/described
	Motor Skill, <u>How</u> to do it (peck a target, ride a bike)
	Areas of brain in which above process has been well studied/described
	<u>Episodic</u> (personal history) & <u>Semantic/Associative</u> (facts) memory
	Areas of brain in which above process has been well studied/described
	Types of cells found in Hippocampus whose activity becomes associated with particular parts of a familiar env
	The type of map formed by a subject who gets to know the spatial layout of a particular environment
	Subsection of above hindbrain area associated with conditioning of "eye blink" response
	Area of Tegmentum (in midrain) that also plays a role in "eye blink" response
	Task requiring application of rule "Pick alternative that is the same as the sample stimulus"
	Area lesioned in rats caused impairment on above task
	Area that projects to Prefrontal Cortex, implicated in declarative memory
	Area of Cortex associated with "working memory", especially when response delays are involved
	Syndrome, from B1 deficiency via chronic alcoholism, that esp affects cells of above area
	Type of memory deficit most commonly associated with above
	Symptom of above involving "tale-telling" in which imagination not distinguished from knowledge
	Famous patient with damage to Hippocampus & other temporal areas. Symptoms include...
	Deficit in ability to generate new ("consolidate") memories
	Type of learning/memories above patient <u>unable</u> to form
	Above patient did NOT show deficits in this type of learning/memory
	Limbic structure that plays a role in learning such as "Conditioned Fear", and in arousal to "taboo"
	Deficit in ability to recognize (remember) faces
	Area of brain associated with above, where presumably relevant data are "stored"
	Area of brain where well-learned voices, words are "stored"

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LANGUAGE & LATERALIZATION	
	Dominance of one cerebral hemisphere over the other for particular functions
	Test in which one hemisphere is anesthetized to test for capacity/speed of processing of other
	Area in left temporal cortex larger in most humans (& some other primates), assoc'd with language processing
	Cognitive principle that like-disrupts-like (e.g. left hemisphere activated by language>>slower rt hand response)
	Main bundle of axons connecting two hemispheres
	Patient in whom above connections have been severed (as in treatment for Epilepsy)
	Additional inter-hemisphere connection, between anterior cortex, esp of temporal lobes
	Hemisphere dominant for most language processing
	Area associated with language production
	Location of this area
	Type of aphasia associated with damage to this area
	One type of difficulty in above, in which speech is slow and halting
	Another deficit involving word order and the use of syntax markers
	The fixed class of terms that organize syntactical relations such as prepositions, articles, conjunctions, etc.
	Deficit involving difficulty in "finding" words, esp of the above class
	Deficit in one aspect of the "language of the deaf" associated with the above
	Area associated with language comprehension
	Location of this area
	Type of aphasia associated with damage to this area
	Unlabored speech, with normal prosody, as seen in above
	Deficit involving difficulty in "finding" words, esp of the class below
	Open (changeable) class of terms that includes nouns and verbs
	Deficit in which patient cannot understand spoken words at all (even if can read or write)
	Deficit involving using irrelevant or made-up words
	Aspect of language of the deaf NOT affected by damage to the above area
	Cortical area in which damage would result in affecting above language of the deaf
	Fibers that connect the above areas involved in production and comprehension of speech
	Type of aphasia associated with damage to this area
	Deficit in which similar sounding words, but with different meanings, are substituted during attempt to repeat
	Aspect of working memory involving rehearsal that is probably important normal function of these connections
	The following are specializations of this hemisphere
	Ability to get the "gist", to see the "larger picture", to organize narrative, etc.
	Abilities involved in learning, remembering and navigating environments
	Abilities involved in facial and nonverbal expression and interpretation
	Domain in which above abilities come into play in the aesthetic organization of sound