QUIZ 1: Week 2 – Spring Quarter 2012

Which of the following is not a normal hemispheric asymmetry?

(a) Broca’s area is larger in the right hemisphere than in the left hemisphere
(b) Planum Temporale is larger in the left hemisphere than in the right hemisphere
(c) primary auditory cortex is larger in right hemisphere than in left hemisphere
(d) none of the above

What area of the brain integrates heading and location to encode the path and place of self-movements? (Path dependent/route centered)

(a) sub-region 7a of the parietal lobe
(b) hippocampus
(c) area MST
(d) entorhinal cortex

A(n) _________ frame of reference utilizes the self as the central point whereas a(n) _________ frame of reference is environment-oriented.

(a) allocentric; route-centered
(b) object-centered; route-centered
(c) object-centered; egocentric
(d) egocentric; allocentric

During the 4 by 4 tic tac toe experiment, the results showed that:

(a) There was no projection
(b) The harder the task, the more likely externalization occurs
(c) Imagination is just as good as projection
(d) None of the above
Gender and IQ does not play a role in the variability of human language:
(a) True
(b) False

Creating an external structure connected to thought provides an anchor for mental projection.
(a) True
(b) False

Which of the symptoms DOES NOT characterize a patient with Wernicke’s Aphasia?
(a) talk fluently
(b) substitute words with other words that sound similar or mean the same thing
(c) they are often unaware of their problem
(d) understand the words spoken to them

Which of the following are the correct four lobes of the brain?
(a) spatial, parietal, occipital, temporal
(b) spatial, frontal, parietal, temporal
(c) frontal, parietal, occipital, temporal
(d) frontal, spatial, occipital, parietal

Which of the symptoms DOES NOT characterize a patient with Broca’s Aphasia?
(a) omit verbs and utter nouns
(b) they are often unaware of their problem
(c) slow and effortful speech
(d) they can sometimes sing the words they cannot speak

When Kirsh says that dancers “think with their bodies”, he means this metaphorically because everyone knows that thinking is an internal mental process that happens only in the brain.
(a) True
(b) False
What is ‘marking’, a technique that dancers use?

(a) Mapping out on the floor the position of each movement in the dance
(b) Practicing the dance until it is engrained into muscle memory
(c) Splitting the dance into sections for more detailed practice
(d) Recreating the dance in a simpler, more abstract version

Lesions in the parietal cortex cause navigational problems.

(a) True
(b) False

For dancers, “marking” serves as a vehicle of thought by

(a) “anchoring projection” to a target, i.e. the dancer can internally imagine dance elements, aided and stabilized by configurations of the body
(b) flexibly substituting one body part for another, e.g. the head may represent the whole torso, the hand may represent the whole body
(c) body movements selectively represent different aspects of the dance phrase (e.g. rhythm, timing, position) thereby drawing attention to particular elements, perhaps enhancing memory
(d) all of the above

To understand the neural underpinnings of spatial navigation, neuroscience research with freely moving animals is necessary because

(a) animals freeze in virtual reality environments
(b) people drive so much, we should really understand what their brains are doing
(c) spatial navigation requires the integration of locomotion sequences, changes in body position, direction of movement, and environmental cues
(d) if you restrain a monkey, it will get mad and won’t do the experiment correctly
Which lobe is known to represent spatial information in the form of cognitive maps?
(a) frontal lobe
(b) temporal lobe
(c) parietal lobe
(d) occipital lobe

Quiz 2 (COGS 1–SP12)
Which of the following is true about autistic babies:

a. Motor and sensory skills are affected early, but social impairments are not noticeable until later on.
b. Motor skills are affected early, but social and sensory impairments are not noticeable until later on.
c. Social and sensory skills are affected early, but motor impairments are not noticeable until later on.
d. Motor and social skills are affected early, but sensory impairments are not noticeable until later on.
e. Social skills are affected early, but social and motor impairments are not noticeable until later on.

A diagnosis of autism requires a deficit in each on the following domains EXCEPT
(a) language and symbols
(b) memory and learning
(c) social relationships
(d) repetitive motor behaviors and restricted interests

The research paper that proposed a link between autism and vaccines in early childhood was retracted because it was based on fraudulent methods.
(a) True
(b) false

Parents who refuse to vaccinate their children
(a) Do not impact the chance that their children will suffer from autism
(b) Increase the chance that their children will die from measles
(c) Contribute to conditions that promote epidemic levels of childhood diseases
(d) all of these
Which of the following correctly describes the Event-Related Potential (ERP) methodology used in brain-imaging studies?
A. Electrical potentials are measured at the scalp and averaged across many trials in which the same stimulus has occurred.
B. A radioactive isotope is injected into the middle cerebral artery as a tracer to monitor blood flow through the brain.
C. The relative levels of oxygen in different areas of the brain are measured, to calculate the amount of blood being used by each respective area.
D. The direction of proton diffusion in water in the brain is calculated to differentiate white from gray matter.

Which of the following attentional problems do people with Autism demonstrate?
A. Difficulty focusing on an object
B. Rapid shifting of attention between multiple objects
C. Over-reliance on attentional cues from others to signal what to focus on
D. Problems disengaging attention from an item being interacted with

In the “sticky mittens” study discussed by Townsend, babies given mittens with Velcro on them and toys covered in Velcro

a) were more likely to develop autism than those in the control group
b) were less likely to develop autism than those in the control group
c) showed a greater interest in faces than those in the control group
d) showed greater FA in white matter underlying motor cortex than the control group

Fractional Anisotropy is:
  a. the relative tendency of water to diffuse along one axis instead of in random directions
  b. the relative tendency of water to diffuse in random directions instead of along one axis
  c. the relative tendency of myelinated axons to grow along one axis instead of in random directions
  d. the relative tendency of cell bodies (somas) to grow along one axis instead of in random directions

Brain morphometry is:
  a. a method of quantifying the functions of different brain areas
  b. a method of quantifying the sizes of different brain areas
  c. a method of quantifying brain connectivity
  d. all of these
Which of the following is NOT true of the myelination process?

a. myelin is produced by oligodendrocyte cells
b. myelination reduces fractional anisotropy
c. myelination affects cell axons
d. myelination begins early in life

To create images of brain structures, diffusion tensor imaging measures

(a) differences in magnetism related to the presence or absence of oxygen in hemoglobin
(b) electric fields associated with action potentials in neurons
(c) ion concentrations in the fluid between neurons
(d) direction and magnitude of proton motion

Brains are like faces in the sense that each one has a unique shape, and different sets of genes mediate the size and shape of each part.

(a) true
(b) false

Cortical surface area and thickness are highly heritable traits, and there is a genetic correlation between the two

(a) true
(b) false

In the juggling study discussed by Jernigan, learning to juggle caused

a) focal increases in gray matter and increased FA in the underlying white matter
b) focal decreases in gray matter and decreased FA in the underlying white matter
c) transient improvement in reading ability
d) increases in social behavior
Which of the following statements is NOT true:

a) individual differences in children’s ability to stop an on-going action is correlated with FA in tracts that connect brain areas important for inhibiting action

b) individual differences in children’s spatial working memory is correlated with FA in the superior longitudinal fasciculus that connects brain areas important for spatial working memory

c) associations between cognitive ability and fiber tract characteristics remain after controlling for age

d) associations between cognitive ability and fiber tract characteristics disappear after controlling for age

Quiz 3
COGS 1 – SP12

Which of the following is NOT true about a ketogenic diet?

a. The ketone bodies cannot diffuse through the blood-brain barrier.
b. It uses fats as a main source of energy instead of carbohydrates.
c. It helps improve the conditions of disorders such as Parkinson's, Alzheimer's, and epilepsy.
d. It mimics the biochemical changes associated with starvation so that the body will use fat as energy.

Which of the following is NOT an anatomical symptom of Alzheimer's disease?

a. thinning cortex
b. expanded ventricles
c. shrunken hippocampus
d. swollen cerebellum

What is the earliest sign of Alzheimer's disease?

a. amyloid plaque buildup
b. tau protein tangles
c. short-term memory loss
d. impaired judgment

Instead of burning ______ as the main source of energy, a ketogenic diet burns _________.

a. carbohydrates; glucose
b. fats; carbohydrates
c. carbohydrates; fats
d. fats; glucose

Which of the following is NOT true about a diet high in carbohydrates:

a. can worsen cognitive abilities in Alzheimer’s disease patients
b. can reverse the anti-seizure effects in epileptic patients who were previously on the ketogenic diet
c. can reduce amyloid-beta plaque levels
d. can provide an excellent source of energy for athletes
Early onset familial Alzheimer’s disease and late onset Alzheimer’s disease have different effects.
  a. True
  b. False

What type of Alzheimer’s disease has the highest prevalence?
  a. Early Onset Familial
  b. Late Onset Familial
  c. Early Onset Sporadic
  d. Late Onset Sporadic

What happens during Alzheimer’s disease?
  a. cell death shrinks the brain
  b. tau protein detaches from the microtubules and result in toxic tangles
  c. amyloid-beta plaques block neurotransmitters from reaching the post-synaptic neurons
  d. all of these

In the point-light experiment, the mirror neurons were just as active for the point-light image that mimicked biological motion as they were for the scrambled point-light image and static image.
  a. True
  b. False

In the fMRI experiment described by Dr. Saygin, which stimulus elicited the greatest "prediction error" signal in the parietal lobe?
  a. Human actor with a human appearance
  b. Robot actor with a robotic appearance
  c. Robot actor with a human appearance
  d. Human actor with a robotic appearance

Dr. Saygin stated during her lecture that the front of the brain controls ____________ processes and the back of the brain controls ____________ processes.
  a. Movement; Olfactory
  b. Auditory; Action
  c. Action; Perception
  d. Perception; Action

Mirror neurons are specific to vision.
  a. True
  b. False

Activity in the superior temporal sulcus is important for:
  a. processing biological motion
  b. motor planning
  c. amyloid plaque buildup
  d. all of these
What is NOT true about fMRI?

a. Has many low resolution functional images  
b. You can’t wear metal jewelry inside the scanner  
c. Poor temporal resolution  
d. Poor spatial resolution

Which brain structures and functions are NOT represented in the human Mirror Neuron System:  
(a) premotor cortex — involves motor planning and control  
(b) entorhinal cortex — encodes episodic memory  
(c) posterior superior temporal sulcus — encodes anatomical motion  
(d) intraparietal lobule — integrates multisensory information

Quiz 4  
COGS 1 – SP12

The results from the spatial configuration task showed that Dutch speakers almost always preferred a ______ frame of reference, but the Mayan usually preferred a ______ frame of reference. 

a. Intrinsic, Absolute  
b. Absolute, Relative  
c. Relative, Absolute  
d. none of these

In the Growing Organism Experiment, subjects were shown 3 pictures of a growing animal and told to put them in order. How did Taiwanese speakers orient the pictures? 

a. Always from left to right  
b. Always from right to left  
c. Mostly from right to left  
d. Mostly from left to right

Linguistic relativity refers to how 

a) modern languages are all related to the original language of our African ancestors  
b) features of non-linguistic cognition differ as a function of the languages an individual speaks  
c) Einstein’s theory applies to cognitive linguistics  
d) Closer genetic relationships among cultural groups results in more similar languages
In the key/bridge experiment described by Dr. Bergen,
a) speakers were more likely to attribute male characteristics to the item marked for masculine
gender in their language, and female characteristics to the item marked for feminine gender in
their language
b) speakers were more likely to attribute male characteristics to the key and female
characteristics to the bridge
c) speakers were more likely to attribute male characteristics to the bridge and female
characteristics to the key
d) speakers were not at all influenced by the gender of the item in their language, and were
equally likely to attribute male and female characteristics to both the key and the bridge

If I say that John is standing north of the beachball, what frame of reference am I using?
a. Absolute
b. Relative
c. Intrinsic
d. Innate

Evidence that language influences non-linguistic aspects of cognition is evidence
a) against the modularity thesis
b) for the modularity thesis
c) rooted in the headturn preference procedure
d) none of these

In terms of understanding spatial relationships, very young English-learning infants behave more
like:
a. English-speaking adults
b. Korean-speaking adults
c. English-speaking adolescents
d. None of these

What is transitional probability?
a. The probability of two events occurring at the same time
b. The probability of a language two similar speech sounds
c. The probability of one event occurring right after another
d. None of these

In language development, children are able to
a) perceive different phonemes before they are able to produce those phonemes.
b) produce different phonemes before they are able to perceive those phonemes.
c) produce and perceive all the same phonemes on the same developmental time course.
d) produce and perceive different phonemes with no discernible pattern.
To study language development in “pre-linguistic” children, experimenters use clever strategies to measure when children notice differences in speech sounds. Common strategies include all of the following EXCEPT the
a) Headturn preference procedure—infants look at the source of a sound
b) Eye-tracking—infants look at objects that are named
c) Trans-cranial magnetic stimulation—current is applied to the infants’ brain and behavioral outcomes are recorded
d) High-amplitude sucking—infants will suck harder to get desired auditory reinforcement

Children’s language development shows all of the following systematic patterns EXCEPT
a) They only perceive the phonemes that they can produce.
b) They apply rules for the past-tense of regular verbs to irregular verbs.
c) They use commonly used sentence constructions to express their own ideas.
d) They consistently replace phonemes with other phonemes.

Animals such as chinchillas can:
a. distinguish grammatical gender
b. understand infant-directed speech
c. distinguish between human speech sounds
d. engage in variegated babbling

Categorical perception refers to a phenomenon in which people are better able to perceive
a) differences between items in different categories than items in the same category—even when objectively those differences are exactly the same
b) differences between items in the same category than items in different categories—even when objectively those differences are exactly the same
c) the difference between ‘in’ and ‘on’ than between close-fitting and loose-fitting containment
d) all of these

Which of the following statements is NOT true:
a) Before 9 months, children are able to distinguish between speech sounds in almost every human language.
b) By 12 months, children have begun to lose sensitivity to speech sounds in languages they do not hear.
c) Research on speech perception is typically done with Canadian babies because Canadians are genetically superior at learning language
d) Babies learning both Spanish and Catalan distinguish between Catalan /e/ and /E/ at 4 months, cannot at 8 months, but can (again) at 12 months

Which information do children NOT use to solve the word segmentation problem:
a) statistical analysis (transitional probabilities between speech sounds)
b) biases for certain word stress patterns
c) over-regularized verb forms
d) silences between words
Professor Hutchins studies cognition “in the wild.” Based on his lecture, which one of the following is NOT why airline cockpits are a great place to study cognition:

a) You can observe how automated pilot systems take over brain functions of human pilots.
b) You can observe the timing and sequence of eye-hand coordination in consequential activities.
c) You can observe how pilots adapt their behavior to numerous external constraints.
d) You can observe patterns in language use that suggest cultural influences on cognition.

The number of fatal accidents per million departures differs worldwide. Professor Hutchins found an inverse correlation between the ratio of accidents and average caloric intake, i.e. countries with a high number of flight-related fatalities have populations with low average daily calorie consumption. He used this example to illustrate that:

a) Pilots should eat more to maintain an adequate blood sugar level.
b) Pilots in foreign countries should learn to speak English fluently to avoid accidents; the correlation with caloric intake is not meaningful.
c) Safe aviation depends on strong infrastructure (manifest in food distribution, education, and a flight system), not necessarily language and culture differences.
d) Poor countries have old planes and the worst airline food.

A language ecology in an airline cockpit refers to how people use language in all the related situations and contexts, including spoken words and written text. Language ecologies tend to show regular patterns, based on roles, tasks, tools, and similar constraints.

a) true
b) false

d) The airline cockpit is a complex language ecosystem.
Based on eye-tracking data, Professor Hutchins asserts that the pilot uses his eyes to “enact” the flight path when reading the chart, and this serves as an example of embodied cognition.

a) True
b) False

By collecting eye-tracking data in the cockpit simulator, Professor Hutchins’ research team is exploring all of the following cognitive phenomena EXCEPT:

a) how and when pilot and co-pilot focus on the same or different things.
b) how computer vision can help pilots avoid errors.
c) how visual attention corresponds with speech.
d) how visual attention corresponds with action.

Which of the following statements about primates is FALSE?

a) Humans and monkeys interface the world with their hands.
b) Monkeys are incapable of displaying deference or respect to another monkey.
c) Hand-eye coordination is a key aspect of primate cognition.
d) Monkeys use different tools, depending on their "culture".

Dolphins are incapable of learning through imitation; they learn through individual trial and error.

a) True
b) False

Choose the correct order for these species by brain size:

a. Human > Chimpanzee > Dolphin
b. Human > Dolphin > Chimpanzee
c. Chimpanzee > Human > Dolphin
d. Dolphin > Human > Chimpanzee

Which of the following is NOT an aspect of social cognition found in chimpanzees?

a. Deception.
b. Coalition-building.
c. Play.
d. Buying and selling.

Two species can inhabit the same environment, but experience two very different “realities”.

a. True
b. False

_______ view the world through echolocation.

a. Sea slugs
b. Dolphins
c. Primates
d. Killer whales
What animal finds it very difficult to learn the Win-stay/Lose-shift protocol?

a. Dolphins
b. Primates
c. Hummingbirds
d. Killer whales

Which of the following is NOT a defining feature of a "cultural tradition"?

a. The behavior is learned by succeeding generations.
b. The behavior is not instinctual.
c. The behavior originates from a single innovator or small group thereof.
d. The behavior is explained to others using words or other symbols.