COGS1

Section D

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Office Hours: Tuesday 2:00-3:00pm @ CSB 229
Brief review for the topics of last week

• Infant Social Development - Dr. Deak
• Introduction to Mirror Neurons & Embodied Cognition - Dr. Boyle
Infant Social Development
Review questions

1. Why is the study of development important?
2. What are the different characteristics of social skills?
3. What are the social skills described in lecture?
4. What is kin recognition?
5. Know the design and results from the study “Do 3-month-olds discriminate biological motion” (Bertenthal et al, 1987).
1. Why is the study of development important?

- Algebra v.s. Calculus
  - Layer of difficulty in understanding how a system is changing
- Real-world applications
  - Better treatment
  - Improve education at both school and home
  - Improve live of humans at risk
2. What are the different characteristics of social skills?

Social skills are complex, diverse, and multivariate. They depend on the social context in which a creature finds itself along with the creature’s purposes.
3. What are the social skills described in lecture?

- Kin recognition
- Hunting/foraging/feeding – Playing
- Mating
- Aggression/dominance
- Communicating
4. What is kin recognition?

Can help us...
- Survive
- Form attachment relationship
5. Know the design and results from the study “Do 3-month-olds discriminate biological motion” (Bertenthal et al, 1987).
Review questions - continued

6. What is biological motion?
   • What is a point light walker (PLW)?
   • In PLW studies, what manipulation is commonly used that makes it no longer seem like biological motion?

7. Know the experimental design and result of the study “Do infants discriminate a parent’s face from a stranger’s” (Layton & Rochat, 2007).

8. What is attention-sharing? What is gaze-following?
6. What is biological motion?

- What is a point light walker (PLW)?
- In PLW studies, what manipulation is commonly used that makes it no longer seem like biological motion?

Check out Biomotion Lab!!
7. Know the experimental design and result of the study “Do infants discriminate a parent’s face from a stranger’s” (Layton & Rochat, 2007).
8. What is attention-sharing? What is gaze-following?

- Look where someone is looking
- Get someone to look where you’re looking
- Important for teaching & learning
Mirror Neurons & Embodied Cognition
Review questions

1. What is embodied cognition?
2. How does it differ from the classic understanding of cognition?
3. What and where is Area 4?
4. What and where is the premotor cortex?
5. How do we “read each other’s mind”?
   - What is “mindblindness”?
   - What is “Theory of mind”
1. What is embodied cognition?

**Embodied Cognition**

A. Cognition is influenced and biased by:
   1. States of the body
   2. The environment

B. Abstract cognitive states are:
   1. Grounded in states of the body

The brain is not the only cognitive resource we have to solve problems.
2. How does it differ from the classic understanding of cognition?

Classic cognition
- Internal representation or mental structure
- Schemas
- Strict functional localization

Embodied cognition
- Interaction of body and environment
- Functional circuits
3. What and where is Area 4?

Area 4

Primary motor cortex
4. What and where is the premotor cortex?

Area 6

Secondary motor cortex
+ Premotor cortex
5. How do we “read each other’s mind”? What is “mindblindness”? What is “Theory of mind”

Mindblindness
- It refers to an inability to attribute mental states to others
- Poor mind reading abilities
- The autism spectrum
- It is related to empathy

Theory of mind (ToM)
- The ability to attribute others’ mental states
- One of the social skills
- False-belief task
5. How do we “read each other’s mind”? What is “mindblindness”? What is “Theory of mind”? 
Review questions - continued

6. What areas in the brain will become active when hearing action words like ‘kick’, ‘lick’, ‘pick’?

7. What are mirror neurons?
   • Where are they located in the brain?
   • When do they become active (more precisely; what do they code for)?
   • What factors can affect their pattern of firing (i.e. what can cause them to fire more or less)?

8. What variables do scientists study in autism? Why do we say autism might be a mirror neuron related problem?
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People on the autism spectrum and neurotypical people differ in

- Brain connectivity and size
- Cerebellar abnormalities
- Theory of mind abilities

Related to the function of MN!!
Readings
Review questions

1. What types of paradigms do researchers often use to study how infant/young children think?
2. What do babies seem to know about the world?
3. According to the reading, “How babies think”, how can/do children discover cause and effect relationships?
4. In what tasks do children outperform adults?
5. How does the baby brain differ from an adult brain?
1. What types of paradigms do researchers often use to study how infant/young children think?
2. What do babies seem to know about the world?

Babies are little scientists, learning the rules about the world like adults.

Physics:
Infants look longer at a toy car that appears to have passed through a solid wall, which means that babies think it’s weird/surprising. They seem to have an “intuitive” physics.
3. According to the reading, “How babies think”, how can/do children discover cause and effect relationships?

Continuous statistical evidence when they are totally “into” the task.
4. In what tasks do children outperform adults?

Some tasks that involve creative thinking (such as learning unusual possibilities)

They seem to be more open-minded than adults.

Blicket detector task
5. How does the baby brain differ from an adult brain?

Baby brains are more...

- Connected (More connections between neurons)
- Flexible in learning
- Lack prefrontal control
Review questions - continued

6. How does development affect children’s cognitive abilities?
7. From an evolutionary point of view, why do human beings have longer childhoods?
8. What functions do mirror neurons play a part in?
9. What new findings regarding the location of mirror neurons in humans were mentioned in the reading, “First direct recording made of mirror neurons in human brain”? 
6. How does development affect children’s cognitive abilities?

![Diagram showing the spectrum of development ranging from Plastic/Flexible to Stable/Efficient.](https://didyouknowblog.com)
7. From an evolutionary point of view, why do human beings have longer childhoods?

Precocial species (like chickens) rely on a set of specific innate capacities to get around the world.

Altricial species (like humans) rely on learning.

Intelligence and flexibility across the animal kingdom are correlated with the length of childhood.

Therefore: Humans have longer childhoods because learning is so important to us.
8. What functions do mirror neurons play a part in?

- Imitation
- Emotion recognition
- Empathy

*And are purported to play a role in many more
9. What new findings regarding the location of mirror neurons in humans were mentioned in the reading, “First direct recording made of mirror neurons in human brain”? 

Premotor cortex  Inferior parietal lobe  Medial prefrontal cortex  Medial temporal lobe
Quiz time!

● No talking, signing, or communicating of any kind.
● Put away your books, notes, computers, phones, etc.
● Pen or pencil is okay (just make sure it’s a black pen and you press hard with a pencil).
● Write your name in the “Name” box, write and circle in your PID, and sign the academic integrity agreement.
● Circle this section
● Please have your student ID out when you turn in your quiz!
Please write down and bubble your PID and circle A or U

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Section you are taking this quiz:

Please Bubble only one!

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| [3] Wednesday @ 12 Jason |
| [4] Wednesday @ 2 Zoe   |
| [5] Friday @ 11 Elena   |
| [6] Friday @ 12 Angelica|
| [7] Friday @ 2 Kevin    |

Bubble THIS section, not the one you registered.

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You need to bubble ALL your answer to the scantron.

ACADEMIC INTEGRITY

By taking this quiz, you agree that you will follow ALL UCSD ACADEMIC INTEGRITY policies.

It is YOUR responsibility to know and understand all of the policies. Failure to follow all UCSD Academic Integrity policies could result in expulsion from UCSD.

Signature: Date

Your signature above certifies that you will follow and that you know that you will suffer the consequence for ANY academic integrity violation.

You MUST sign here, or you would get ZERO on your quiz.