# COGS 1: FALL 2018

## Section F, week 7

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Reminder: Piazza posting guidelines

1. Check to see if your question has already been asked/answered before posting.
2. If your question has anything to do with schedule (quiz, exam, readings, EC quiz, etc.), check the syllabus before asking.
3. Post questions publicly whenever possible (unless it’s a private matter) so other students can help answer and/or if other people have the same question they can see the answer.
4. Do not post answers to quizzes/exams. This is an academic integrity violation.

Side note: students have been sharing self-made study guides - TA’s do not review these and cannot guarantee the content/answers are reliable
Last Week’s Topics

- Lecture 11 | Dr. Rossano: Social Cognition and Social Interaction
- Lecture 12 | Dr. Jernigan: Developmental Population Neuroscience
Lecture 11

Social Cognition and Social Interaction,

Dr. Rossano
1. What scopes of comparative study were mentioned by Dr. Rossano?
2. What does WEIRD stand for? Why is this concept important for sciences studying humans? What example did Dr. Rossano use to illustrate this?
3. How can we think of diversity and individual variation in comparative study of cognition?
4. What are the dimensions of social interaction mentioned in lecture?
5. What is accountability? What were the examples of this concept mentioned in class?
6. What is the Materazzi effect?
7. What is gaze-following? How do humans and apes differ in regards to how they gaze-follow?

8. What is voice-following? What are the two possibilities mentioned by Dr. Rossano for why species might differ in regards to this ability?

9. How do humans and apes differ in regards to food sharing?

10. What are the two types of justice that Dr. Rossano mentioned? What difference between 3- and 5-year-olds do the experiments with property illustrate?

11. From the reading: What is a “Stag Hunt” situation? How do humans and chimpanzees differ in their behavior in “Stag Hunt” situations?
1. What scopes of comparative study were mentioned by Dr. Rossano?
2. What does WEIRD stand for? Why is this concept important for sciences studying humans? What example did Dr. Rossano use to illustrate this?

- **WEIRD**
  - Western
  - Educated
  - Industrialized
  - Rich
  - Democratic

From Henrich, Heine and Norenzayan (2010):

- 96% of subjects come from countries representing 12% of the world population and 80% of them are undergraduates!!
- How much can we generalize to **all humans** from studies with these populations?
2. What does WEIRD stand for? Why is this concept important for sciences studying humans? What example did Dr. Rossano use to illustrate this?

How much can we generalize to all humans from studies with these populations?

In some cases - not so much

Chimps are also rational maximizers, like non-US
Extra-class material, won’t be on the quiz:

Illusion for Americans

*NOT* an illusion for San

Potential explanation
3. How can we think of diversity and individual variation in comparative study of cognition?

**Diversity, Individual Differences and Change**

- Diversity as an assumption

- Diversity as a tool: "If indeed the fish will be the last to discover water, perhaps we can help ourselves by looking at some other species" (Bruner, 1971)

- Individual differences are not noise

- Development = Change

- Evolution = Change
4. What are the dimensions of social interaction mentioned in lecture?
5. What is accountability? What were the examples of this concept mentioned in class?

**Accountability**: Taking into consideration how others will perceive, understand and judge our actions when we act/plan to act.
6. What is the Materazzi effect?

Materazzi effect:
Making your opponent feel anger (or other emotions) to make them make mistakes.
7. What is gaze-following? How do humans and apes differ in regards to how they gaze-follow?

Humans - follow eye direction

Chimps - follow head direction
8. What is voice-following? What are the two possibilities mentioned by Dr. Rossano for why species might differ in regards to this ability?

**Voice following:** same as gaze following, but for voice
9. How do humans and apes differ in regards to food sharing?

Getting food from others: you can
- Steal
- Request
- Humans: requesting is more successful

<table>
<thead>
<tr>
<th>Action Types</th>
<th>Recordings 2010 (adult male)</th>
<th>Recordings 2012 (without adult male)</th>
<th>Recordings 2014 (with adult male)</th>
<th>Recordings 2016 (with adult male)</th>
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</thead>
<tbody>
<tr>
<td>Taking/Stealing</td>
<td>91% (902)</td>
<td>98% (752)</td>
<td>96% (815)</td>
<td>97% (764)</td>
</tr>
<tr>
<td>Requesting</td>
<td>7% (64)</td>
<td>2% (17)</td>
<td>3% (27)</td>
<td>2% (16)</td>
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<tr>
<td>Offering</td>
<td>2% (23)</td>
<td>0</td>
<td>1% (10)</td>
<td>1% (6)</td>
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<tr>
<td><strong>Total</strong></td>
<td>100% (989)</td>
<td>100% (769)</td>
<td>100% (852)</td>
<td>100% (786)</td>
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Orangutans: Request success ~33%
Stealing success ~80%
Chimpanzees: Request success ~ 30% (Silk et al. 2013)
10. What are the two types of justice that Dr. Rossano mentioned? What difference between 3- and 5-year-olds do the experiments with property illustrate?

Justice:
- Distributive
  - How do we fairly divide resources?
- Procedural
  - How do we make sure everyone behaves fairly and gets fair treatment?
10. What are the two types of justice that Dr. Rossano mentioned? What difference between 3- and 5-year-olds do the experiments with property illustrate?

In the unfair conditions, 5yo try to make sure everyone gets a fair treatment (e.g. by switching colors of pillows between turns)
10. What are the two types of justice that Dr. Rossano mentioned? What difference between 3- and 5-year-olds do the experiments with property illustrate?

**Study 2: Having a voice in a decision**

Majority vote on what distribution of stickers everyone gets

When do 3yo and 5yo protest?
10. What are the two types of justice that Dr. Rossano mentioned? What difference between 3- and 5-year-olds do the experiments with property illustrate?

**Study 2: Results**

3yo don’t care if their opinion is asked

5yo care about their opinion being heard
11. From the reading: What is a “Stag Hunt” situation? How do humans and chimpanzees differ in their behavior in “Stag Hunt” situations?

Cooperation = large reward

Non-cooperation = small reward

Both chimpanzees and humans can cooperate to get larger rewards, but they do it in different ways from humans.
11. From the reading: What is a “Stag Hunt” situation? How do humans and chimpanzees differ in their behavior in “Stag Hunt” situations?

Hamann, Warneken, and Tomasello (2011)
11. From the reading: What is a “Stag Hunt” situation? How do humans and chimpanzees differ in their behavior in “Stag Hunt” situations?

Coordination:
- overall, humans coordinate their decisions in collaborative situations, especially by communication
- great apes do not

Free-riders:
- humans exclude free riders from the obtained resources (e.g. Melis, Altricher, Schneider, & Tomasello, 2013)
- chimpanzees don’t exclude (e.g. Melis, Schneider, & Tomasello, 2013 - only thing that mattered was how close the chimpanzee was to the food when it arrived)
Lecture 12
Developmental Population Neuroscience,
Dr. Jernigan
Lecture 12 | Review Questions

1. What is a behavioral phenotype? What are the factors that are required to build a conceptual model for behavioral phenotypes in adolescents?

2. What is the PING Project? What were some of the findings mentioned in lecture?

3. What is the ABCD study? What are its objectives? What factors contributed to the timeliness of the study?

4. What are the different types of data collected across research sites in the ABCD study?

5. How has the ABCD study’s data been analyzed? How is this different than previous studies?
1. What is a behavioral phenotype? What are the factors that are required to build a conceptual model for behavioral phenotypes in adolescents?

**Behavioral Phenotype**

- Relatively persistent traits or habits
  - “Individuality”
  - Examples:
    - Skills, level of expertise/knowledge, creativity, emotional/social biases
- Where do they come from?
  - Moderate heritability
  - Genomic variants may contribute
  - As a result of *highly polygenic genetic architecture*
  - Persistent questions:
    - What mediates genotype-phenotype mapping?
    - What accounts for variability that cannot be explained by genes?
1. What is a behavioral phenotype? What are the factors that are required to build a conceptual model for behavioral phenotypes in adolescents?

Conceptual Metaphor for Emerging Behavioral Phenotypes in Development

Behavioral Phenotypes can be thought of as a function of:

- Neural genotype
- Environmental Effects
- Cumulative Experience

*Interactions between these factors*
2. What is the PING Project? What were some of the findings mentioned in lecture?

PING Project: Overview

- Create a public pediatric imaging genomics database
  - Recruited 1700+ 3-20 year old youth at many sites to study key measures

- Key Deliverables:
  - Basic neuromedical data
  - Neuropsychological assessment with NIH cognition toolbox
  - Social-emotional phenotypes
  - Multimodal imaging
  - Genome-wide genotyping

- Limitations:
  - Cross-sectional design -- hard to account for individual differences
2. What is the PING Project? What were some of the findings mentioned in lecture?

**PING Project: Findings**

GAM Fits of Age, Gender to NIH Cognition Toolbox

- Used NIH toolbox to show developmental changes across different measures
  - Working memory
  - Episodic memory
  - Speed of processing
  - Attention
  - Executive Function
  - Vocabulary & Reading

- Kids get better at these measures, BUT note individual variability
2. What is the PING Project? What were some of the findings mentioned in lecture?

PING Project: Findings

Cortical surface area & cortical thickness:

Regional Variability & Flanker Task
2. What is the PING Project? **What were some of the findings mentioned in lecture?**

PING Project: Findings

Anxiety in Children Associated with Developmental Neural Phenotype

- Smaller ventromedial prefrontal cortex associated with higher anxiety phenotype.

![Brain image with graph showing VMPFC vs. Age]
3. What is the ABCD study? What are its objectives? What factors contributed to the timeliness of the study?

ABCD Study: Overview

- Long-term nationwide study of brain development in youth
- Highly collaborative
- Many participants, many labs, many types of measurements
3. What is the ABCD study? What are its objectives? What factors contributed to the timeliness of the study?

**ABCD Study: Objectives**

- Attempts to determine how childhood experiences interact and how this may influence brain development and other outcomes
  - 1. Develop **standards for normal brain development**
  - 2. Identify **individual developmental trajectories** by tracking progress in individual
  - 3. Study how **experiences** (factors like sports, health, sleep, etc.) influence development
  - 4. Look at **genetic vs. environmental** factors
  - 5. Study **mental disorders**
  - 6. Determine effect of **substance use**
3. What is the ABCD study? What are its objectives? What factors contributed to the timeliness of the study?

**ABCD Study: Why now?**

- **Maturing technology**
  - Advanced multisite, multiple modality neuroimaging, more affordable genotyping
  - Novel assessment technologies (i.e. online/mobile/FitBits)

- **Maturing Scientific Workplace**
  - More experience in long-term multi-site studies with family and youth
  - Increasing acceptance of open science
  - Advanced computational expertise

- **Rapid Changes in the Culture**
  - Changing policies and laws with respect to substances available to youth
  - Changes in substances, modes of use
  - Increasing screen time, social media engagement, etc.
4. What are the different types of data collected across research sites in the ABCD study?

The ABCD study is innovative in the number of measurements it used:

- Multimodal neuroimaging
- Health and behavioral assessment
- Activities and environments monitored
- **Biosamples**: hormones, epi/genetics, substance use
- Novel wireless, web based, and nanoengineered assessment technologies
5. How has the ABCD study’s data been analyzed? How is this different than previous studies?

**The ABCD study uses an Open Science Model**

**Data Exploration and Analysis Portal (DEAP)**
- Tool that allows researchers to perform analysis with pre-coded factors (race/ethnicity/socioeconomic factors/etc.)
- **Hypothesis pre-registration**

The ABCD Study aims to raise the standards for complex analyses and prompt best practices in research.
Quiz time!

- No talking, signing, or communicating of any kind.
- Put *everything* away except a pen or pencil (make sure it’s a black pen and press hard with a pencil)
- When you get your quiz:
  1. Write your name in the “Name” box
  2. Write and bubble in your PID
  3. Sign the Academic Integrity Agreement
  4. Bubble in *this* section (regardless of which you’re assigned to)
- Please have your student ID out when you turn in your quiz!
Write and circle in your PID

Write down your name here

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<table>
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<tr>
<th>STUDENT PID NUMBER</th>
<th>Last NAME, First NAME</th>
<th>Section you are taking this quiz:</th>
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<tbody>
<tr>
<td>A/U</td>
<td></td>
<td>Please Bubble only one!</td>
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<tr>
<td>[0]</td>
<td></td>
<td>[1] ○ Monday @ 3 Zoe</td>
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<td>[1]</td>
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<td>[2] ○ Monday @ 4 Lauren</td>
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<td>[3] ○ Monday @ 5 Alexis</td>
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<td>[4] ○ Monday @ 6 Kenny</td>
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<td>[4]</td>
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<td>[5] ○ Friday @ 9 Sandhya</td>
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<td>[8] ○ Friday @ 12 Elizabeth</td>
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COGS 1: QUIZ I - Choose the best answer. Please bubble in your answers to the right.

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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.

YOUR ANSWERS GO HERE

1 [A] [B] [C] [D] [E] ○ ○ ○ ○ ○
2 [A] [B] [C] [D] [E] ○ ○ ○ ○ ○
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Bubble in the current section
Bubble in the answers
Sign and date here
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