# COGS 1: Spring 2019

## Section **F**, Week 7

| | | | |
|---|---|---|---|
| **Professor Boyle** | mboyle@ucsd.edu | Friday, 2-4 pm | CSB 130 |
| **Lauren** | lcurley@ucsd.edu | Tuesday, 10-11 am | CSB 225 |
| **Lexi D.** | adalenco@ucsd.edu | Tuesday, 12:30-1:45 pm | The Loft |
| **Elena** | edreisba@ucsd.edu | Thursday, 1-2 pm | CSB 114 |
| **Adrian** | ajm033@ucsd.edu | Wednesday, 5-6 pm | CSB 114 |
| **Audrey** | aberardi@ucsd.edu | Tuesday, 4-5 pm | CSB 114 |
| **Devansh** | d4agarwa@ucsd.edu | Monday, 4-5 pm | CSB 114 |
| **Lori** | rol044@ucsd.edu | Monday, 10-11 am | CSB 114 |
| **Lexi F.** | adfrankl@ucsd.edu | Thursday, 4-5 pm | CSB 114 |

# Important Information

- **COGS 1 Website completely updated - all readings for the rest of the quarter, syllabus, etc.**

- **Midterm 2**
  - On Tuesday, May 21 during lecture of Week 8
  - Covers all material from Weeks 4 – 6

- **EC Reading Quiz**
  - Based on reading for Dr. Voytek's lecture: *"The Unreasonable Effectiveness of Data"*
  - Available on TritonEd from Wednesday May 22 @ 4pm – Thursday May 23 @ 10:00 am

# Last Week's Topics

- **Lecture 10 | Dr. Kirsh: Thinking with the Body**

- **Lecture 11 | Dr. Bergen: Profanity and Language**

**Devansh**
d4agarwa@ucsd.edu
Section: Wednesday 5PM
OH: Monday 4-5PM @ CSB 114

**Lori**
rol044@ucsd.edu
Section: Friday 11AM
OH: Monday 10-11AM @ CSB 114

# Lecture 10 | Review Questions (1 of 6)

1.  What is embodied cognition? Why is an embodied approach necessary for fully understanding and appreciating cognitive processes?

2.  What is marking? What are some examples of marking? How might it be helpful?

3.  How does the environment facilitate cognition? Provide the examples given by Dr. Kirsh during lecture (e.g. using hand for speed reading)

4.  What is projection? How does it tie into cognition?

5. What are the steps of the "interactive strategy" as described by Dr. Kirsh. Are these steps fixed? How do we "create" change?

6. What is Dr. Kirsh's "thesis"? What are the theoretical claims associated with his thesis?

7. What are the sensory modalities involved in projection? Provide examples given in the lecture (e.g. the abacus).

8. Why does Dr. Kirsh propose that you can "think through body movement"? What experiment did he conduct to demonstrate how this occurs?

**Vote!!**

9.  What aspects must one attend to in marking? Why does Dr. Kirsh given the analogy of sketching on paper?

10. What is the difference between "full" vs. "marked" choreography? How does this relate back to "thinking through body movement"? What is the value of "marking"? Which strategy best facilitates learning?

11. What experiment did Dr. Kirsh conduct to evaluate whether "marking" choreography facilitated learning of choreography? What experimental design was utilized?

# Lecture 11 | Review Questions (4 of 6)

12. What makes a word taboo? What are the different categories of profanity?

13. Are there any linguistic characteristics that are associated with taboo words (e.g. word length, syllable structure, etc.)?

14. How are Tourette's, swearing and the basal ganglia related?

15. Do profane words go in or out of fashion? Cite examples for each.

16. Are speech errors evidence of repressed subconscious thoughts?

17. Which area of the brain is associated with inhibitory control? Evidence?

18. What is automatic aphasia? What is coprolalia?

19. Are there any physical consequences when a person swears?

# Reading | Review Questions (6 of 6)

20. Where is Broca's Area? Wernicke's Area?

   a.   What aspects of language do they generally process?

   b.   Is language restricted to these areas?

21. Who was Jacques Lordat?

22. What happened to patient EC? Why is he important to research regarding profanity?

# 1. What is embodied cognition? Why is it necessary for fully understanding and appreciating cognitive processes?

## _Thinking Shaped by the Body and Environment_

- Classical view:
  - Brain = **input-output** device
- Embodied cognition:

BRAIN

*Complex interplay*

BODY
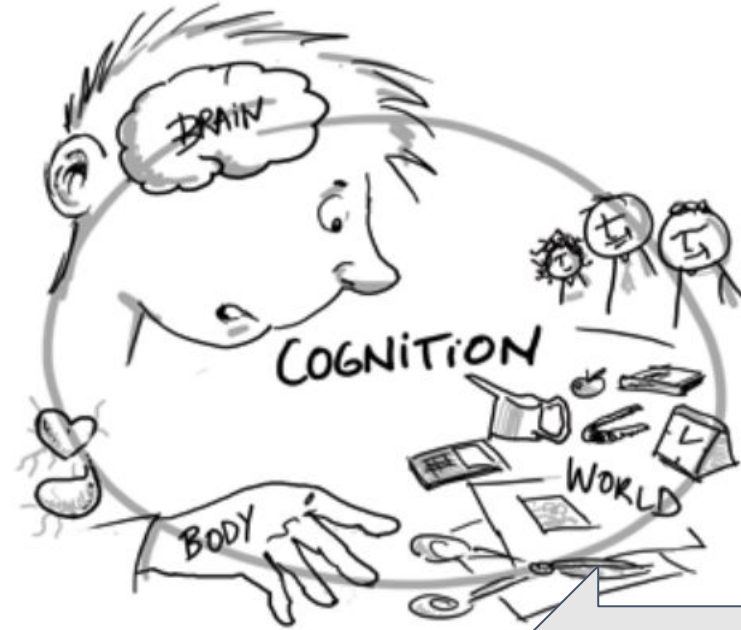
All Ques.

# 2. What is marking? What are some examples of marking? How might it be helpful?

## Marking

- Abstracts from full
- Focus on specifics
- Less energy compared with full out

## Examples

- Tennis swing - by aspect
- Cello - on the arm

All Ques.

# 3. How does the environment facilitate cognition? Provide the examples given by Dr. Kirsh during lecture.

## *Surroundings Enable Externalization*

- Interactive mental imagery can be generated through:
  - Gestures
  - Body movement
  - Object manipulation
  - Writing
  - Drawing

All Ques.

# Attaching Mental Images To Physical Structures

- Projection ⇒ more powerful than mental imagery alone as we can project beyond what we can readily imagine.
- External structures can be utilized to project with eyes closed or open.
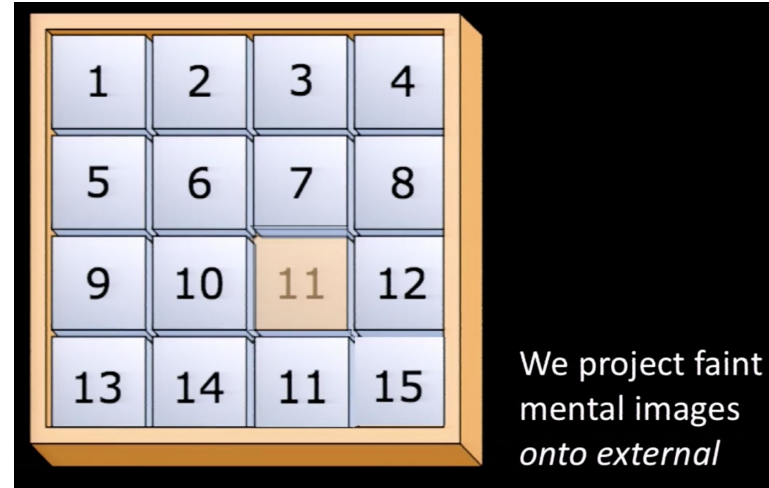


We project faint mental images *onto external*

All Ques.

# 5. What are the steps of the "interactive strategy" as described by Dr. Kirsh. Are these steps fixed? How do we "create" change?

## Project ⇒ Create

- Interactive strategy is encompassed by visual searches, projections and manipulation.
- Externalization accelerates problem solving.
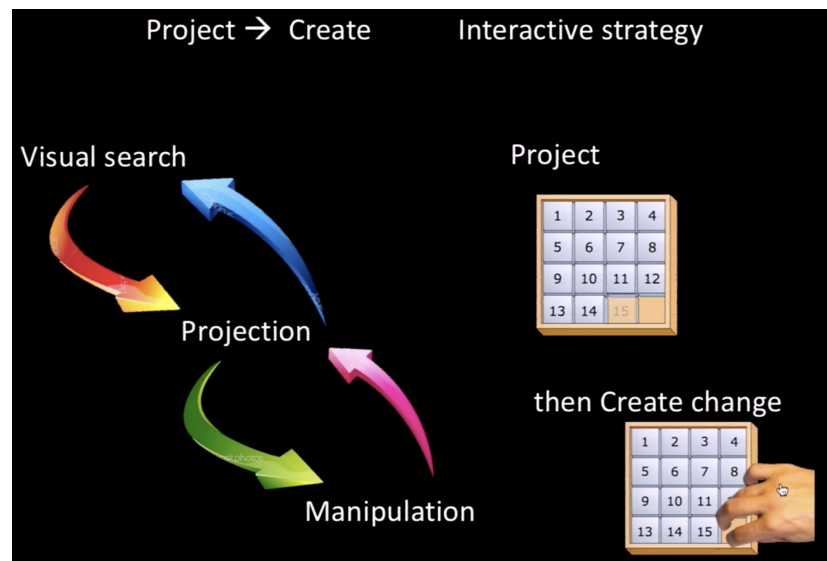
# 6. What is Dr. Kirsh's "thesis"? What are the theoretical claims associated with his thesis?

## Thinking Not Just in the Mind

**Thesis**: Thinking involves making models or simulations through "active" perception, projection and manipulation.



Main Theoretical Claims

Thinking through the Body
Study of Dance Making

Thinking through Instruments
Action vs. Observation

Thinking through Ordinary Objects,
Bottles, Representations, …

# 7. What are the sensory modalities involved in projection? Provide examples given in the lecture (e.g. the abacus).

## <u>Multimodal Mental Projections</u>

- **Kinesthetic**: Using hands to feel the cube
- **Visual:** Modeling abacus
- **Auditory**: Tongue twister
- Other modes (e.g. gustation, olfaction) ⇒ also present to some extent



VISUAL SEE IT.
AUDITORY HEAR IT. SAY IT.
KINESTHETIC DO IT.

# 8. Why does Dr. Kirsh propose that you can "think through body movement"? What experiment did he conduct to demonstrate how this occurs?

## Bodies are Simulation Engines

- Marking allows dancers to use their physique representationally.
- Gestures, writing and manipulating objects also facilitate thinking interactively.
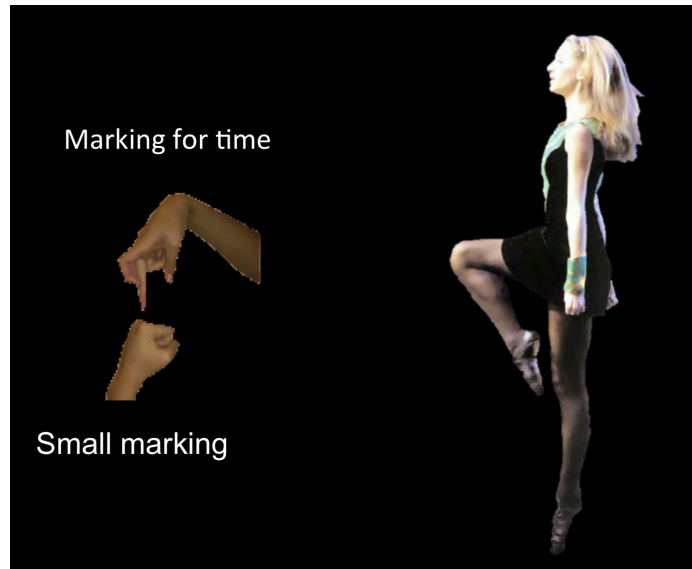


Marking for time

Small marking

**9. What aspects must one attend to in marking? Why does Dr. Kirsh given the analogy of sketching on paper?**

# Sketching with the Body

- Markings anchor projections
- Markings ⇒ cognitive benefits by **simplifying complex actions**
- Learning 10 mins choreo ≅ memorizing 3 paragraphs of text

– Dancers can make    caricatures

– They can    exaggerate

– Focus on  specific aspects of a movement

– They have different sketching   styles
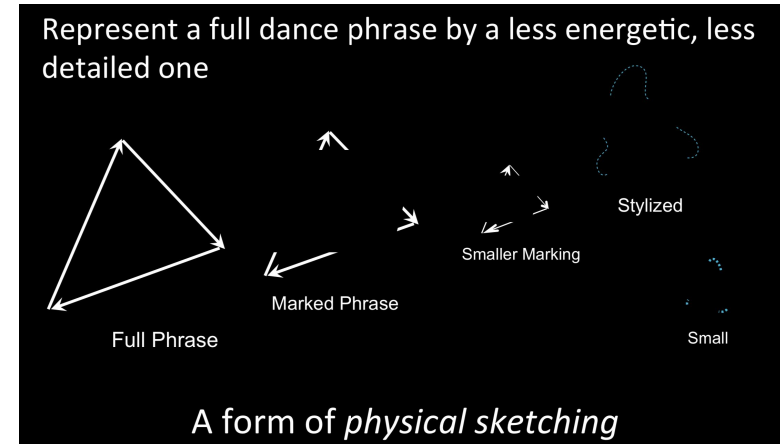
– And   different objectives   when sketching
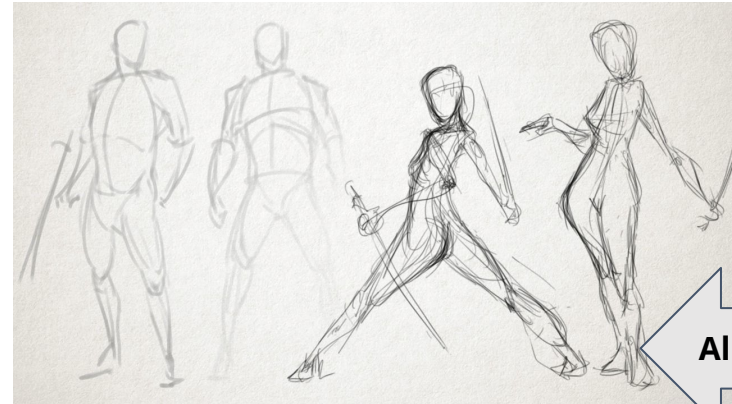
All Ques.

**10. What is the difference between "full" vs. "marked" choreography? How does this relate back to "thinking through body movement"? What is the value of "marking"? Which strategy best facilitates learning?**

# Abstraction from Full Phrase

- Performing movement with full range of emotions vs. with less energy.
- Helps catalyze learning in a concise manner.

Represent a full dance phrase by a less energetic, less detailed one

Stylized

Smaller Marking

Marked Phrase

Full Phrase

Small

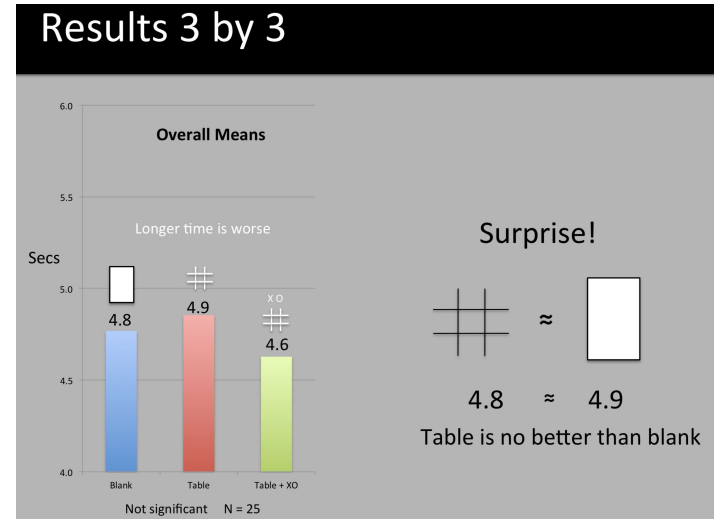A form of *physical sketching*

All Ques.

# 11. What experiment did Dr. Kirsh conduct to evaluate whether "marking" choreography facilitated learning of choreography? What experimental design was utilized?

## Marking Experiment

- Marking, though not perfect, beats full out and mental imagery in case of practicing dances.

## Tic Tac Toe Experiment

- For a 3 x 3 grid, imagination is similar to projection.



Results 3 by 3

Overall Means

Longer time is worse

Secs

4.8    4.9    4.6

Blank    Table    Table + XO

Not significant    N = 25

Surprise!

4.8    ≈    4.9

Table is no better than blank

# 11. What experiment did Dr. Kirsh conduct to evaluate whether "marking" choreography facilitated learning of choreography? What experimental design was utilized?

## Tic Tac Toe Experiment

- For a 4 x 4 grid, projections are more powerful than imaginations alone.
- More importantly, people who were bad visualizers were helped more than good visualizers.
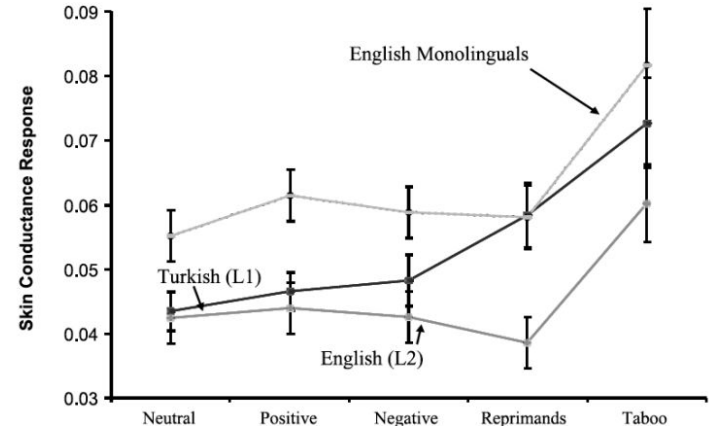


Bad visualizers are helped much more!
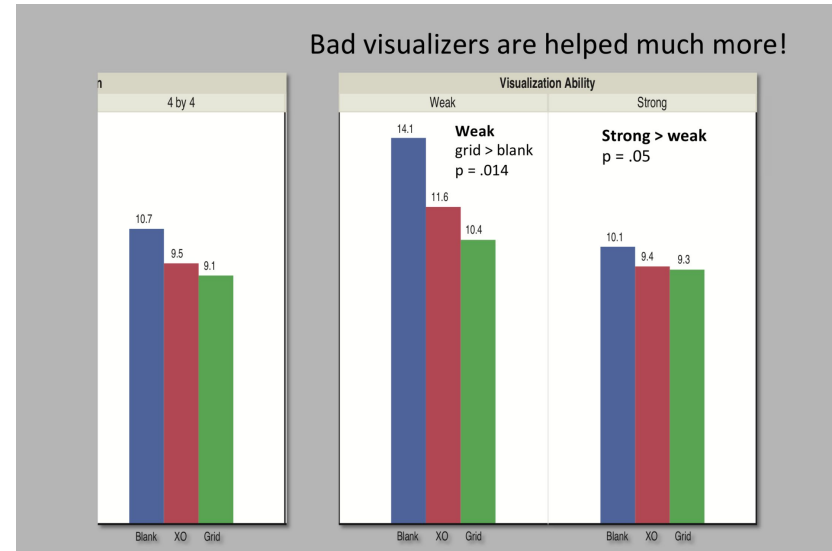
# 12. What makes a word taboo? What are the different categories of profanity?
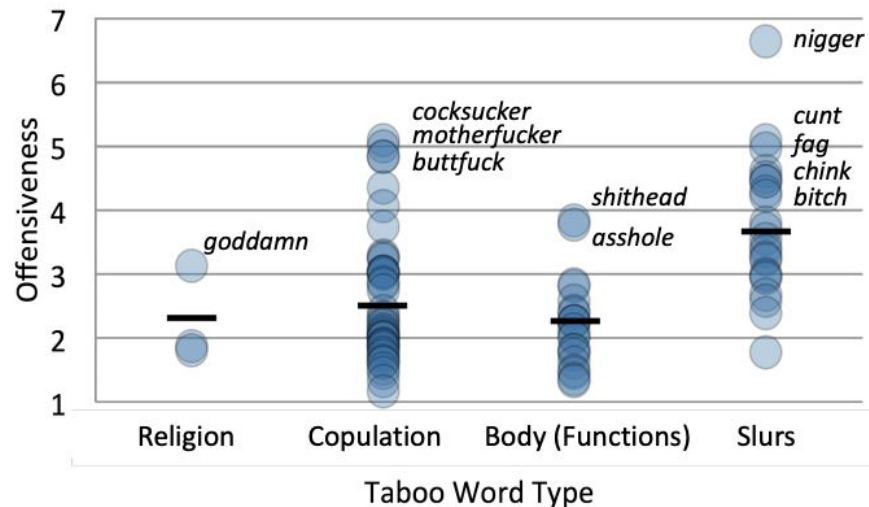
## *Taboo Words = Dependent on Culture*

- Cultural belief / cultural structures for reinforcement
- Eg 1: Japanese ⇒ NO profanity equivalent
- Eg 2: bilinguals ⇒ stronger response to taboo words in native language

# 12. What makes a word taboo? What are the different categories of profanity?

# *Categories of Profanity*

- **Contemporary American English**:
  - Religion, copulation, body, slurs
- **Other languages** ⇒ diff categories
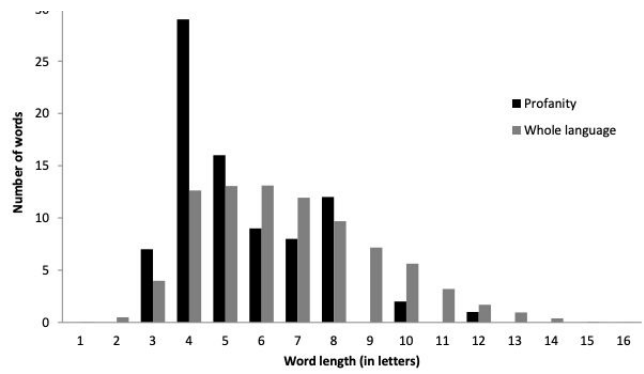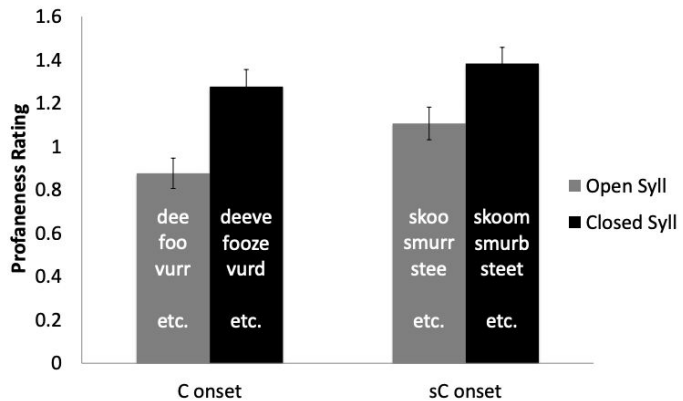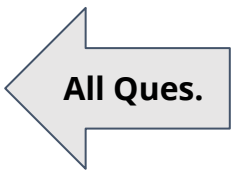  - E.g. animals, diseases

# 13. Are there any linguistic characteristics that are associated with taboo words (e.g. word length, syllable structure, etc.)?

## Characteristics

- Word length
  - 4,  also 3 and 5, → one syllable
- Consonants ending
  - 95 % of profane English monosyllabic (closed)
- C onset ↔ sC onset

All Ques.

# 14. How are Tourette's, swearing and the basal ganglia related?

## Tourette's Syndrome

- Repetitive, stereotyped, involuntary movements and vocalizations
- Eg: coprolalia
- Patients with Tourette's syndrome have different Basal ganglia
  - Fail to inhibit

## Basal Ganglia

- Shared with other animals
- Produce sounds to express emotional states

**Basal Ganglia**

Caudate nucleus
Putamen

Thalamus
Tail of caudate nucleus

Note that you cannot see the Globus Pallidus in this view, as it is located medial to the Putamen

(a)

All Ques.

# 15. Do profane words go in or out of fashion? Cite examples for each.

## Words Can Transform in Meaning Over Time

- Profanity ⇒ constant flux
- E.g. "Dick"
  - 1920's: Dick = "average guy"
  - Originally a common nickname for Richard
  - Also referred to handle of riding crop (military) ⇒ take on new meaning
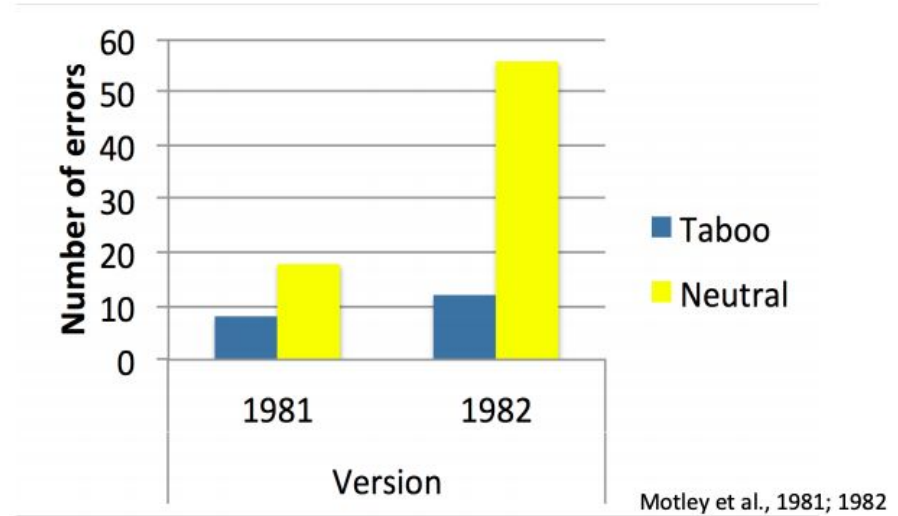
WHY YOU DON'T KNOW *DICK*
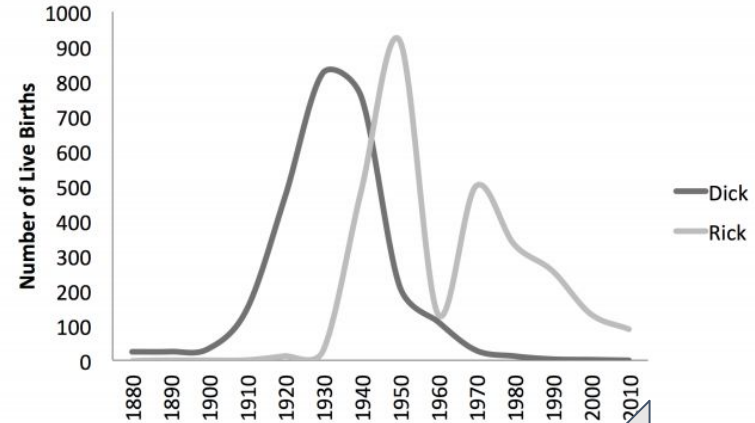
# 16. Are speech errors evidence of repressed subconscious thoughts?

## Speech Errors

- Errors → unstated and repressed thought (Freud)
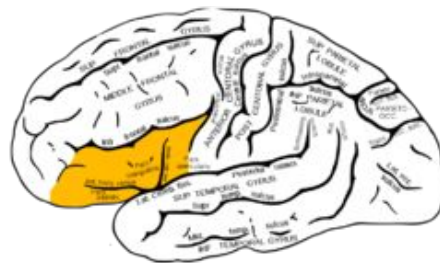- Through experiment
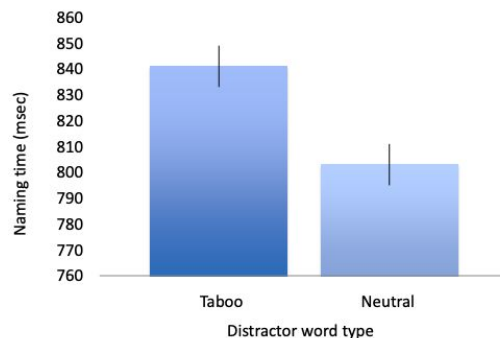  - More errors for neutral words



Motley et al., 1981; 1982

# 17. Which area of the brain is associated with inhibitory control? Evidence?

## Right Inferior Frontal Gyrus

- Inhibitory control
  - Stop unwanted things
- Evidence
  - Picture- word interference
    - Censorship from the brain will slow you down

Implicated in inhibitory control

# 18. What is automatic aphasia? What is coprolalia?

## *Automatic Aphasia*

"could not provide the correct expletive for situations described to him nor could he complete a curse''

Speedie et al., 1993

## *Coprolalia*

- Associated with Tourette's Syndrome
  - Involuntary and repetitive use of taboo language

©!#@*%

All Ques.

# *Measuring Physical Responses to Swearing*

- Measure amount of sweating (skin conductance response) ⇒ hearing "taboo" words
  - Bilingual vs. monolingual effect?
- How long can you keep hand in bucket of ice water?
  - If person is permitted to swear → increased pain tolerance & endurance (i.e. can hold in bucket for longer!)

SWEAT



All Ques.
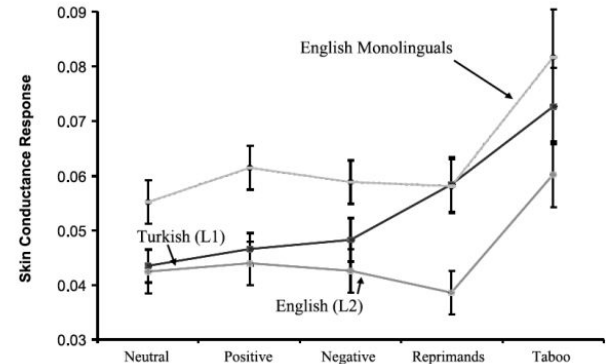
**20. Where is Broca's Area? Wernicke's Area? What aspects of language do they generally process? Is language restricted to these areas?**

# *Language Areas in the Brain*

- Left hemisphere:
  - **Broca's Area** ⇒ speech production
  - **Wernicke's Area** ⇒ speech comprehension
- Language <u>NOT</u> strictly localized to these areas
  - E.g. patient EC ⇒ could still swear w/ left hemisphere removed

Broca

Wernicke

Front          Left Side View          Back
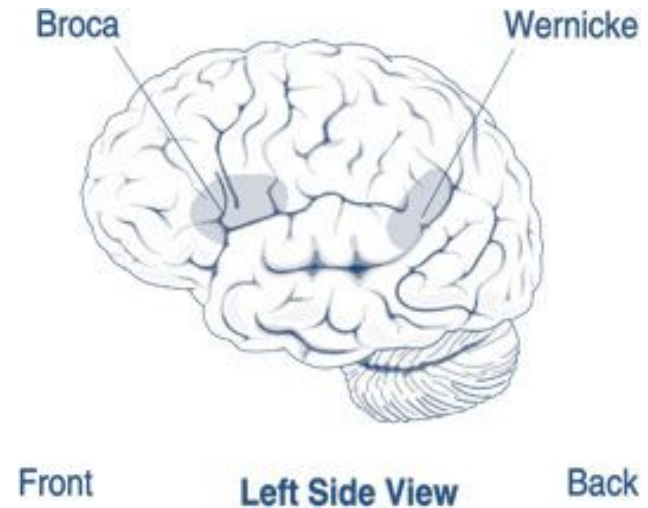
# 21. Who was Jacques Lordat?

## Jacques Lordat

- Father of modern neurolinguistics
- Studied aphasias
- Observed patient Tan:
  - Could only say "I" & "f***"

# 22. What happened to patient EC? Why is he important to research regarding profanity?

## Patient EC

- Left hemisphere removed
- Hard to organize meaning speech
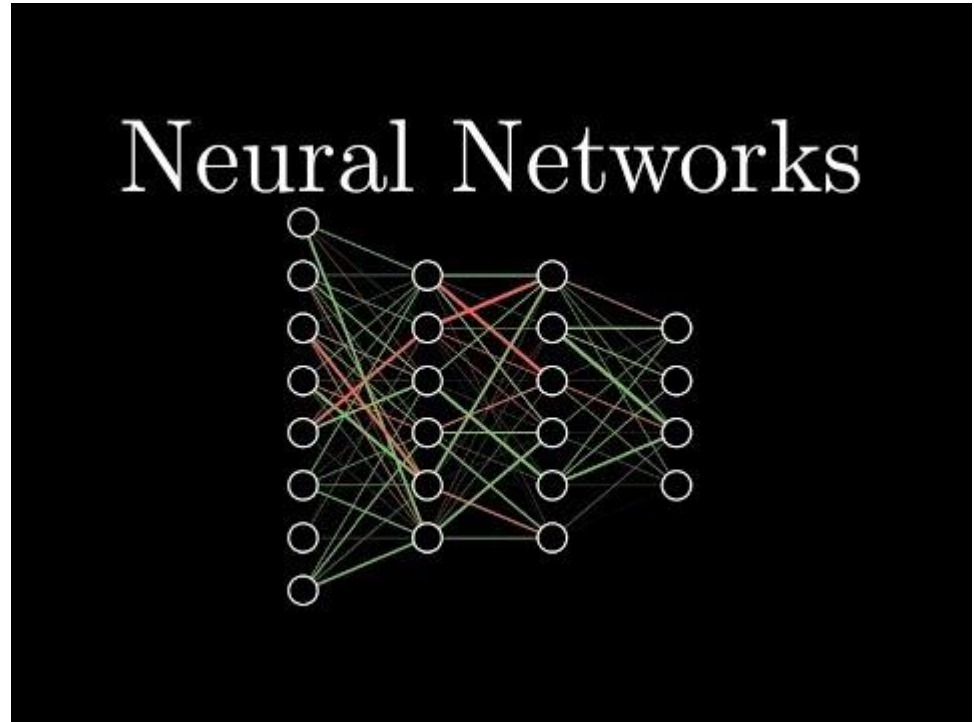- Could swear spontaneously
  - Short emotional phrases



**Don't need left hemisphere at all to spontaneously curse!**

# Great video on neural nets: *But what is a neural network?*

This will be helpful to you as you study for next week's quiz!

Video Link: https://www.youtube.com/watch?time_continue=1&v=aircAruvnKk

# Quiz Time!

- No talking, signaling, 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.

- Bubble in this section
- Please have your student ID out when you turn in your quiz!

Write and circle in your PID

Write down your name here

UC SAN DIEGO – DEPARTMENT OF COGNITIVE SCIENCE

**STUDENT PID NUMBER**

| A/U | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| [0] | ⓪ | ⓪ | ⓪ | ⓪ | ⓪ | ⓪ | ⓪ | ⓪ | ⓪ |
| [1] | ① | ① | ① | ① | ① | ① | ① | ① | ① |
| [2] | ② | ② | ② | ② | ② | ② | ② | ② | ② |
| [3] | ③ | ③ | ③ | ③ | ③ | ③ | ③ | ③ | ③ |
| [4] | ④ | ④ | ④ | ④ | ④ | ④ | ④ | ④ | ④ |
| [5] | ⑤ | ⑤ | ⑤ | ⑤ | ⑤ | ⑤ | ⑤ | ⑤ | ⑤ |
| [6] | ⑥ | ⑥ | ⑥ | ⑥ | ⑥ | ⑥ | ⑥ | ⑥ | ⑥ |
| [7] | ⑦ | ⑦ | ⑦ | ⑦ | ⑦ | ⑦ | ⑦ | ⑦ | ⑦ |
| [8] | ⑧ | ⑧ | ⑧ | ⑧ | ⑧ | ⑧ | ⑧ | ⑧ | ⑧ |
| [9] | ⑨ | ⑨ | ⑨ | ⑨ | ⑨ | ⑨ | ⑨ | ⑨ | ⑨ |

**Last NAME, First NAME**

**COURSE NUMBER**

COGS 1

**SPRING 2019**

Dr. Mary ET Boyle

**Quiz A**

April 9-12, 2019

**Quiz VERSION**

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| ■ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓕ | Ⓖ | Ⓗ |

**Section you are taking this quiz:**

Please Bubble only one!

[1]  ① Monday @ 9 Lexi D.
[2]  ② Monday @ 4 Elena
[3]  ③ Wednesday @ 2 Adrian
[4]  ④ Wednesday @ 3 Audrey
[5]  ⑤ Wednesday @ 5 Devansh
[6]  ⑥ Friday @ 11 Lori
[7]  ⑦ Friday @ 12 Elena
[8]  ⑧ Friday @ 1 Lexi F.

Quiz will not be graded without Academic Integrity Signature.

Bubble in the current section

**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.
**DO NOT DISCUSS THIS QUIZ CONTENTS WITH FELLOW STUDENTS!!!**

Sign and date here

_____

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**

| | [A] | [B] | [C] | [D] | [E] |
|---|---|---|---|---|---|
| 1 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 2 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 3 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 4 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 5 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 6 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 7 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 8 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |
| 9 | Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ |

Bubble in the answers