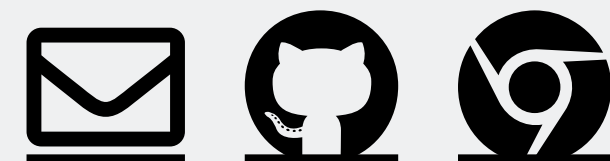# Second Language Acquisition

LG 376 — Semester 2, 2021 (Jan-May 2022)

CLASS 10: COGNITION

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Outline

- Recap: Cognition

- Long-term memory

  - Explicit-declarative & implicit-procedural

  - Declarative/procedural model

- PsychoPy: Installation
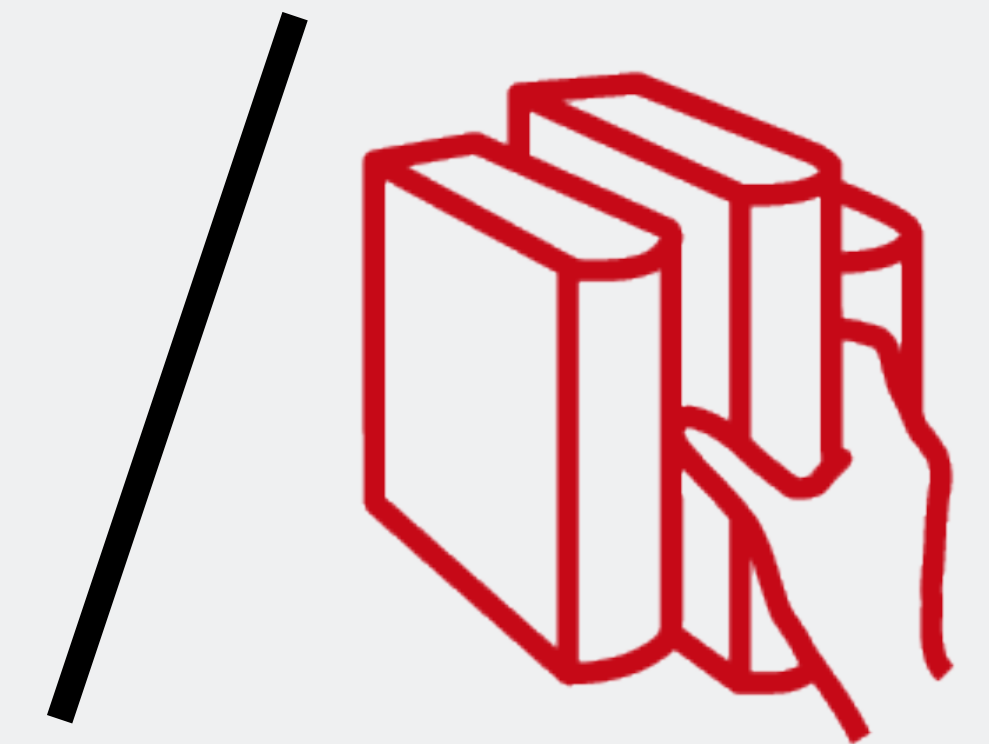
- Looking ahead: Week 11

Recap

Information processing in SLA

- Human mind is a **symbolic processor** engaging in mental processes

  - Mental processes cause human behavior

    - Analogy: CPU and not keyboards or mice

  - Cognition has limited capacity/resource

    - Memory and attention are limited

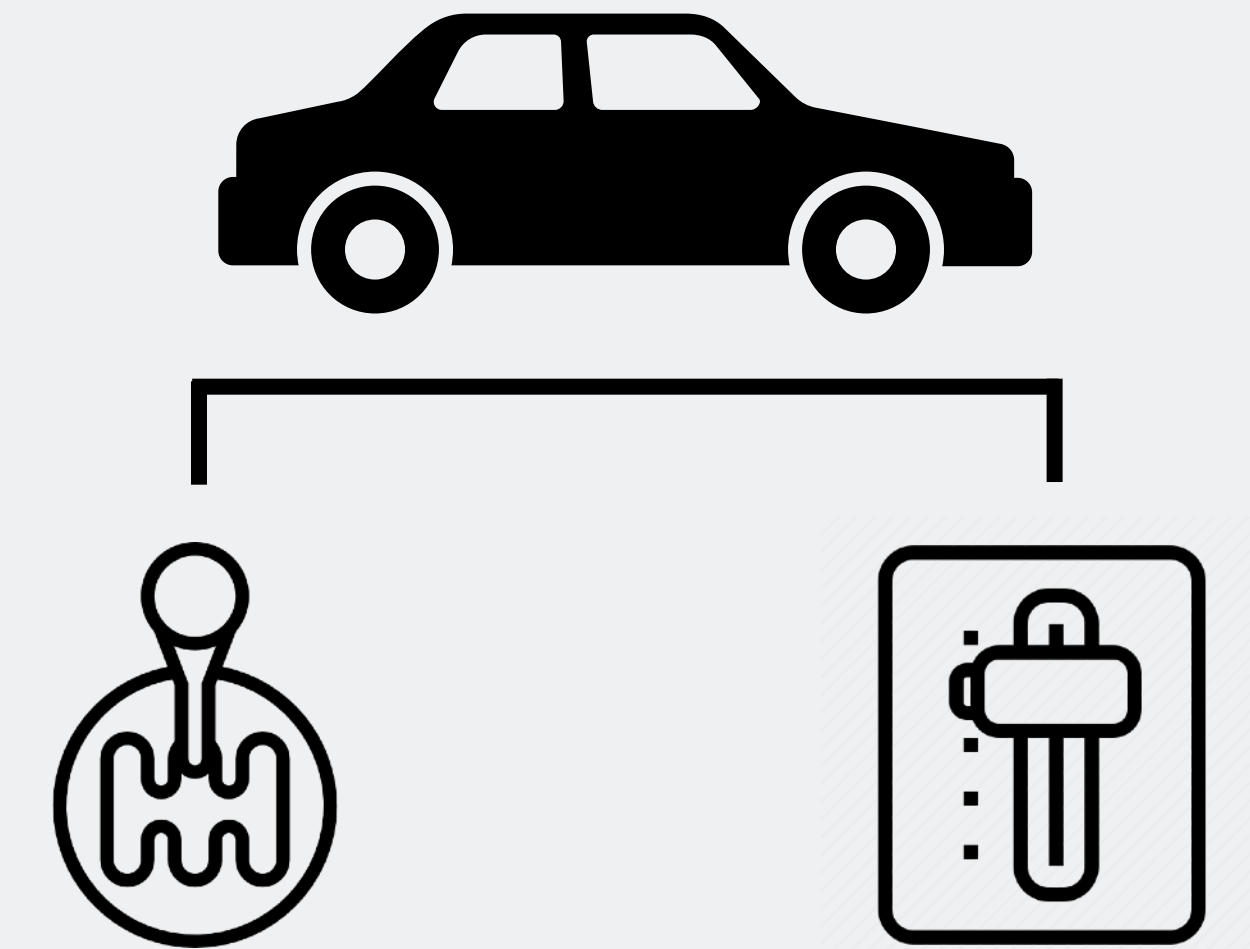   - Think: Netflix and SLA lecture at same time

Information processing in SLA

- Two central tenets:

  1. Cognitive architecture is made up of

     - **representation** (knowledge)

     - **access** (processing)

Image sources: bookshelves and retrieval

Information processing in SLA

- Two central tenets:

    2. Processing comprises of

    - **automatic** (fluent): little resources, parallel

    - **controlled** (voluntary): effortful, serial

Question: Which conversation(s) require more/less controlled processing?

(1) with friend in L1;   (2) with foreigner in L2;   (3) with a stranger in loud party
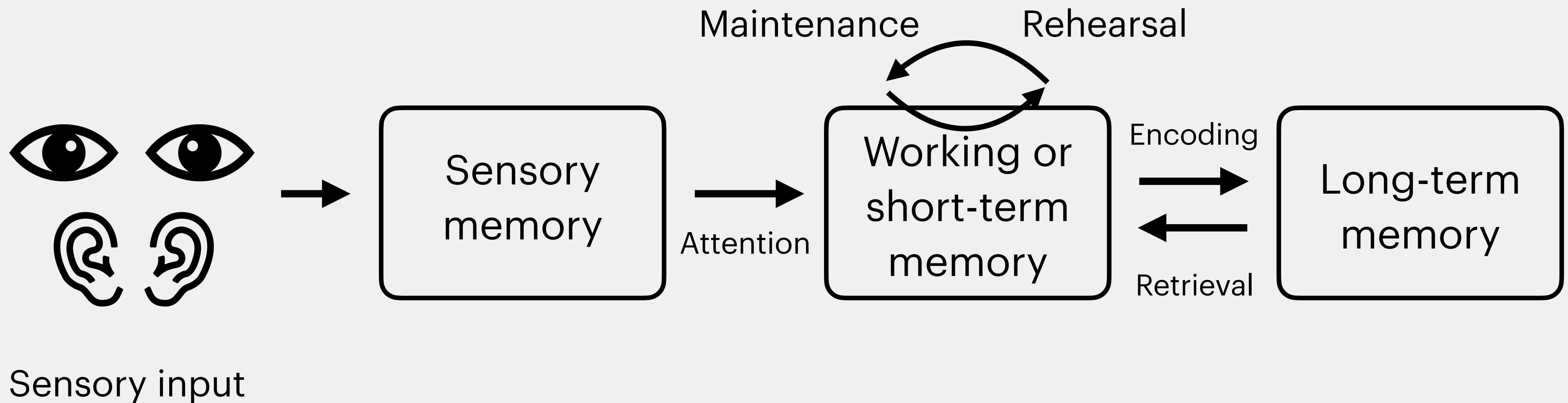
Long-term memory

Setting the scene

- Memory processes

  - **Encoding**: transforming information into a form that can be entered and stored in the system

  - **Storage**: retaining information in memory for later use

  - **Retrieval**: recovering information stored in memory so that we are consciously aware of it

Setting the scene

- Three "stages" of memory:

Maintenance   Rehearsal

Sensory input → Sensory memory → (Attention) → Working or short-term memory ⇄ (Encoding / Retrieval) → Long-term memory
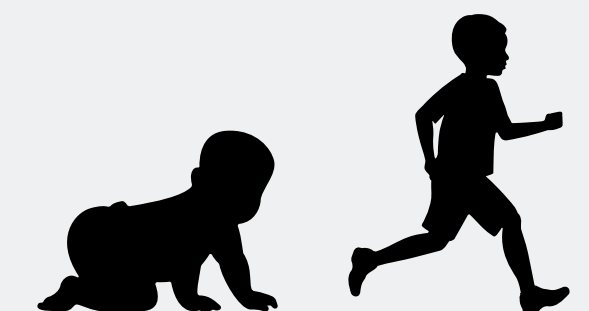
Sensory input

Long-term memory (LTM)

- Function: organizes and stores information ("representation")

- Capacity: unlimited (as far as most researchers believe)

- Duration: thought by some to be permanent

Question: What's the earliest memory you can recall? When did that happen?

Long-term memory (LTM)

- Types or systems of long-term memory

  - **Explicit-declarative memory**

    - Encyclopedic knowledge of facts and events

    - Dictionary of words

Define…. "absurd"

  - **Implicit-procedural memory**

    - Memory for skills and procedures

Image sources: stitching, Statue of Liberty, and USA

Long-term memory (LTM)

- Explicit-declarative memory are that you can consciously recalled/declared
  - **Semantic memory**: information about facts and general knowledge
  - **Episodic memory**: memory tied to your own personal experiences
    - *What month is your birthday?*
    - *What was your first smartphone?*
    - *Where did you go to celebrate your birthday last year?*
- You can actively declare your answers to these questions

Long-term memory (LTM)

- Implicit-procedural memory supports a wide range of phenomena

  - **Priming memory** (recency): recognition of "things" previously perceived

  - **Perceptual memory** (familiarity): "imagery" of birds, apples, etc.

  - **Procedural memory** (motor & movement): motor movement

  - *Door opening (100+ doors you've opened/closed)*

Declarative/procedural model

Michael Ullman

- Evidence suggests that for L1 processing...

  - words may be stored and processed in declarative memory

  - grammar may be stored and processed in procedural memory

- Evidence suggests that for adult L2 processing...

  - words and grammar may be stored and processed in declarative memory

Declarative/procedural model

- When children acquire their L1 (or L2, L3...), grammar is supported by procedural memory and words are supported by declarative memory

	Procedural LTM	Declarative LTM
L1	Grammar	Words
L2	Grammar	Words

Declarative/procedural model

- When adults acquire an L2, both words and grammar are supported by declarative memory systems

- but how we initially learn an L2 influences how it is encoded!

	Procedural LTM	Declarative LTM
L1	Grammar	Words
L2		Grammar & Words

L2 Vocabulary knowledge

- What does it mean to know a word? It means **form-meaning associations**

  - **Size**: total number of words known & represented in LTM

    - **Lexical coverage**: 98% (1 new word every 50)

    - 7,000 **word families** for movies; 9,000 for academic genre

  - **Depth**: how elaborate and well-specified the lexical representation is

    - How does a word sound, how many word parts, what is its collocations?

  - **Strength**: how entrenched in explicit and implicit memory the word is

    - Receptive and productive knowledge, for instance

PsychoPy installation

Next week…

- **<u>Topic</u>**: Cognition (continued)

    - What role does attention play in L2 learning?

    - What is implicit and explicit learning? What are their implications?

- **<u>Reading</u>**:

    - USLA (5.12, 5.13, 5.14, and 5.16)

        - 5.12 = Attention; 5.16 = Learning without rules

- **<u>Assignment</u>**: Test your vocabulary (Bring results to class)

    - go to: https://www.lextutor.ca/tests/vst/index.php?mode=test