

Memory

"Persistence of learning over time through encoding, storage and retrieval of information"

Encoding - getting information into memory

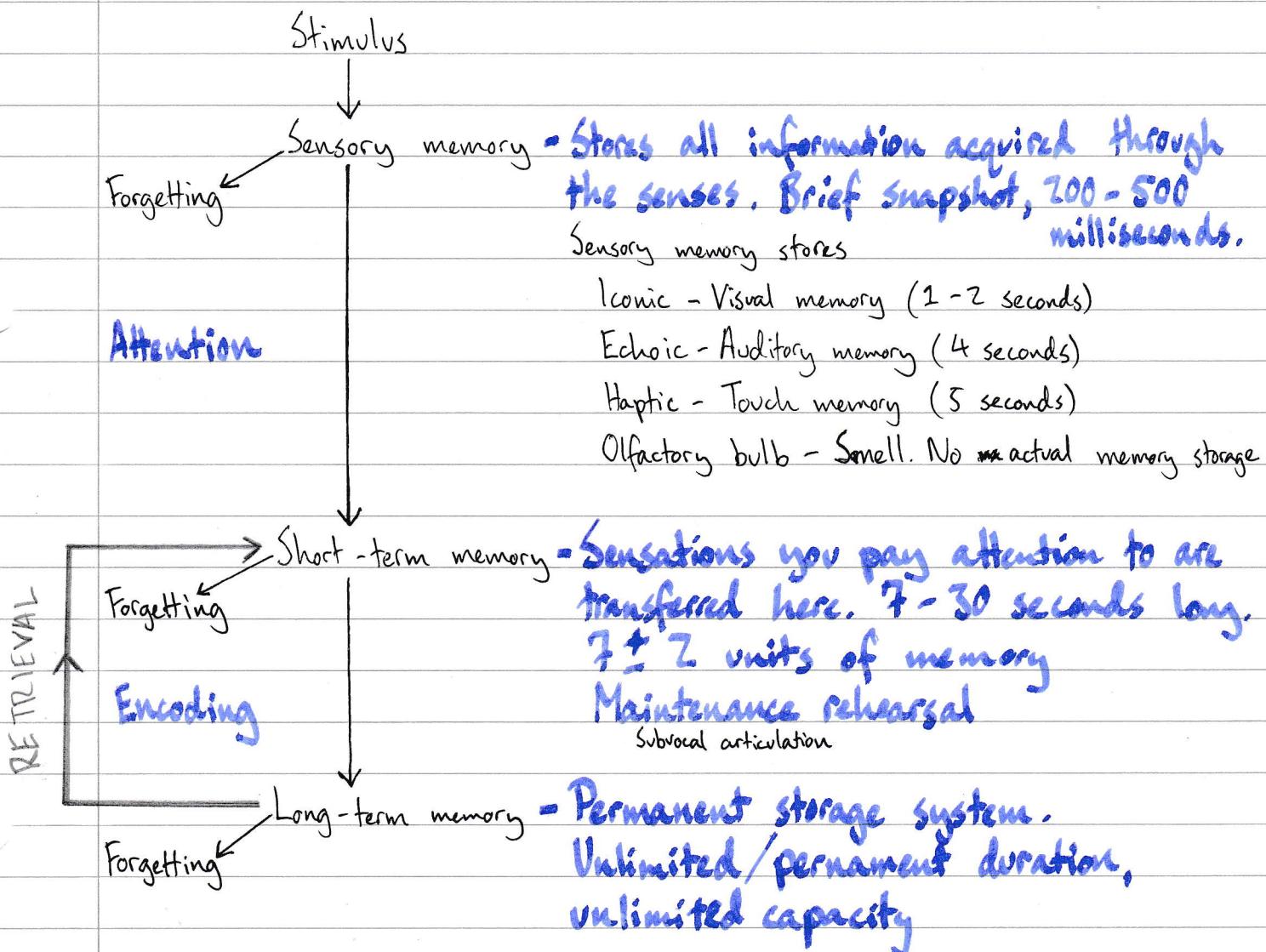
Storage - retaining information over time

Retrieval - recalling information out of memory

Metaphors: Plato - "like a wax tablet", passive process

Socrates - "like a cage full of birds", active process

Information - Processing Model of Memory Atkinson - Schiffrin Modal Memory



Short-term memory - Used to keep track of what is currently relevant

Chunking - Organizing data into manageable units
Works better if data assembled into meaningful groups

Memory experiment - memorising list of words
Primary effect → items at beginning
Recency effect → items at end

Typical order of recall - Recency, Primary, items in middle

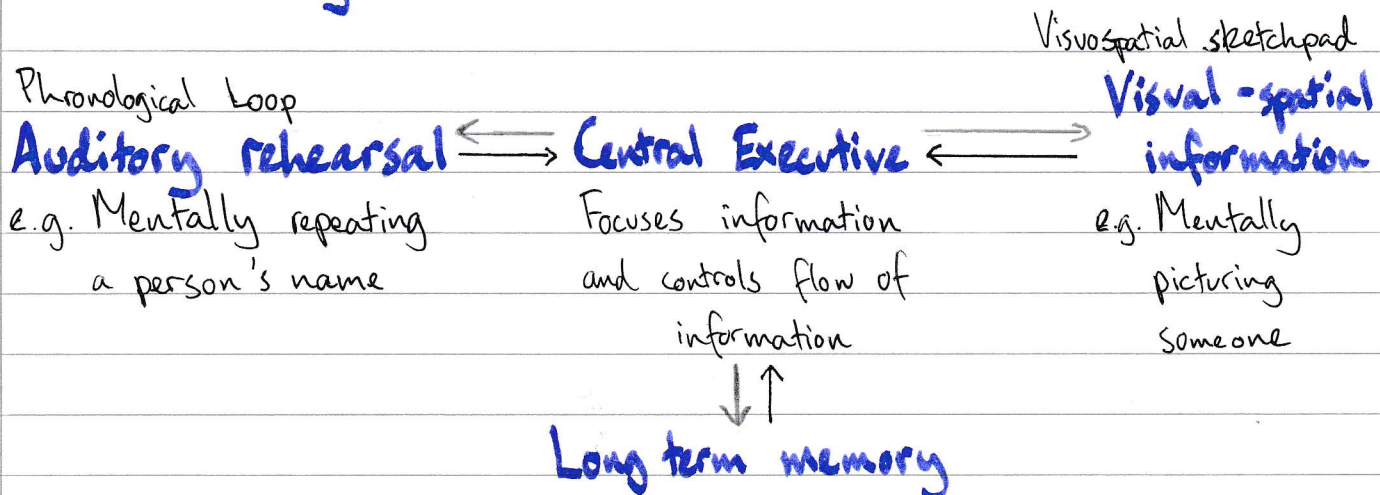
Long-term memory - Events in your life
Facts about the world
Motor skills
Episodic memory
Semantic memory
Procedural memory

Hyperthymesia

Only a small amount of this knowledge is relevant at any moment

Working Memory

Alan Baddeley's model



- Newer understanding of short-term memory
- Focuses on - conscious, active processing of incoming auditory and visual-spatial information
 - information retrieved from long-term memory
 - attention (central executive)

Phonological Loop - holds speech-based information and promotes rehearsal

Visuospatial Sketchpad - visualization

all of above

- Explicit memories - Acquired through "Effortful processing"
- Facts and experiences we can consciously recall
 - Studying, rehearsing, thinking, processing then storing information in long-term memory

- Implicit memories - Formed through "Automatic processing"
- Memories we are not fully aware of

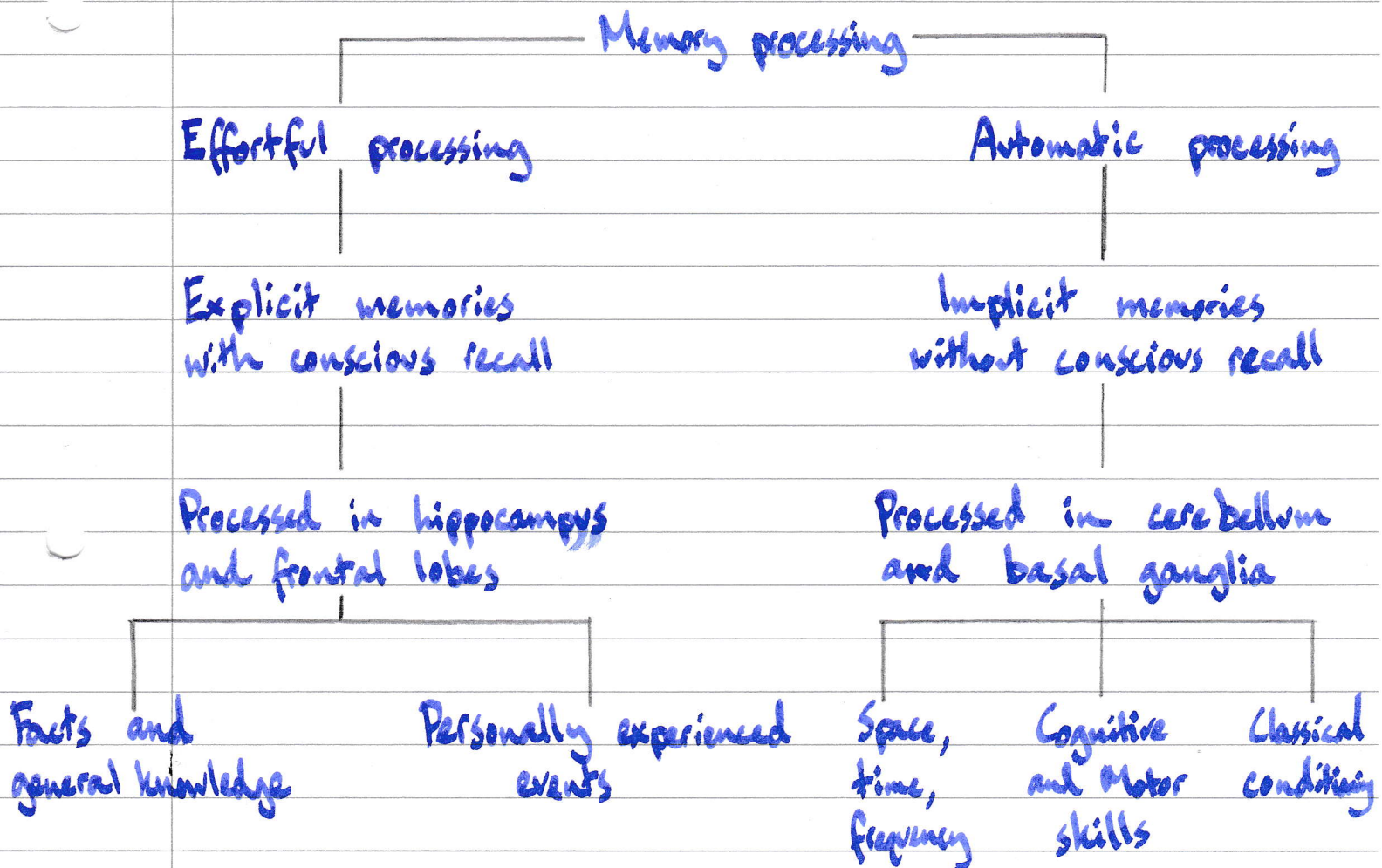
Automatic Processing - Some experiences go directly to long-term implicit memory

> Procedural Memory - knowing how to do things like walking, talking, motor skills

> Conditioned Associations - e.g. smell that remind favourite place

Information about

- > Space - picture where things are in a room
- > Time - backtracking when lost an item
- > Frequency - e.g. 3rd bird I've seen today



Types of Amnesia

Retrograde amnesia - inability to retrieve memories of the past

- can be caused by head injury / emotional trauma. Often temporary
- can also be caused by severe brain damage, which may include anterograde amnesia

Anterograde amnesia - inability to form new long-term memories

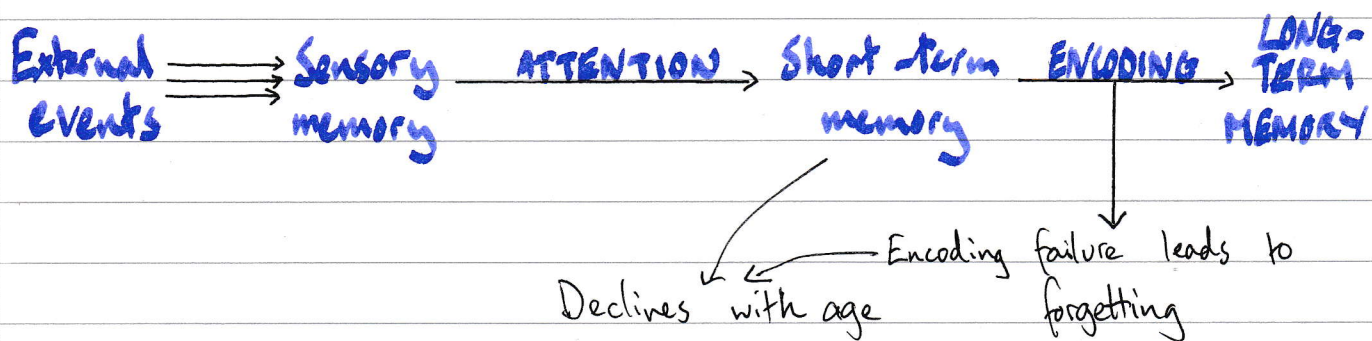
- damage/removal to hippocampus

The Name Problem - Attention

- Information overload
- Single exposure
- Arbitrary
- Not unique

Encoding Failure - Penny example

- never paid attention to small details that aren't important



Retrieval Failure - Tip of the tongue

Failure to retrieve a word from memory

+

Partial recall (first word/words that sound similar)

+

Feeling of successful recall

Why?

Information that is remembered becomes active

Alternate answers block recall

Stuck in ToT state



To break, think of something else

Theories of Forgetting

Lack of Encoding

Not paying attention

Decay

Memories fading with time

Jenkins and Dallenbach, 1924 - Sleep improves memory due to lack of interference

Interference

- Proactive Interference - Old memories interfere with ability to remember new memories
- Retroactive Interference - New memories interfere with ability to remember old memories

Repression

Defense mechanism to keep trauma out of awareness

People with trauma don't forget, just don't fully remember

- experience flashbacks, recurring memories

Improving Memory - self-testing

- spacing/distributed study

- chunking

- mnemonics - linking images to words

peg-word system - linking words with numbers

- deep/semantic processing - meaning of word
(shallow processing - appearance/sound of word)

- context-dependent memory - environment

- state-dependent memory - emotional states
e.g. study while high, take exam while high