

# **Cognitive Level of Analysis** **Learning Outcomes Packet**

**C1**- Outline principles that define the cognitive level of analysis.

**C2**- Explain how principles that define the cognitive level of analysis may be demonstrated in research.

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Principle #1:

Studies that Demonstrate Principle #1:

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Principle #2:

Studies that Demonstrate Principle #2:

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Principle #3:

Studies that Demonstrate Principle #3:

**C3- Discuss how and why particular research methods are used at the cognitive level of analysis.**

Research Method #1: **Experiment**

Studies that Demonstrate Research Method #1:

Explanation for use of Research Method #1:

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Research Method #2: **Case Study**

Studies that Demonstrate Research Method #2:

Explanation for use of Research Method #2:

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Research Method #3: **Questionnaires/Surveys**

Studies that Demonstrate Research Method #3:

Explanation for use of Research Method #3:

**C4- Discuss ethical considerations related to research studies at the cognitive level of analysis.**

Study #1:

Ethical Considerations of Study #1:

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Study #2:

Ethical Considerations of Study #2:

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Study #3:

Ethical Considerations of Study #3:

# General Notes on Memory

## My Model of Memory

### Key Terms

**Memory:**

<b>Type of Memory</b>	<b>Definition</b>	<b>Example</b>
<b>Explicit Memory</b>		
<b>Declarative Memory</b>		
<b>Recall</b>		
<b>Recognition</b>		
<b>Implicit Memory</b>		
<b>Procedural Memory</b>		
<b>Autobiographical Memory</b>		

### Classic Studies

**Ebbinghaus found...**

**Miller found...**

## **C5- Evaluate schema theory with reference to research studies.**

### **Schema Theory:**

#### **Examples of Schema Theory:**

<b>Strengths</b>	<b>Limitations</b>

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#### **Study #1:** Bartlett (1932)

**Aim:** To determine whether a person's memory is impacted by the knowledge (schemas) and the extent to which memory is reconstructive.

**Method:** Had British citizens read the story "The War of the Ghosts" and then rewrite it based on their memory over several months.

**Findings:** Participants remembered the main ideas but remembered it as shorter. Unfamiliar elements were changed to make sense of the story in terms of their own culture.

#### **Conclusions:**

#### **Critical Thinking:**

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## **C5- Evaluate schema theory with reference to research studies.**

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### **Study #2: Brewer & Treyens (1981)**

**Aim:** To investigate whether people's memory for objects in a room is influenced by their existing schemas.

**Method:**

- 30 university students were asked to wait in an office before being called into a research study.
- Participants were taken out of the office and asked to write down everything they could remember from the room.

**Findings:**

- Most participants recalled the schematic objects (desk, typewriter).
- Some participants reported things that would be expected but were not present (books, telephone, etc.)
- Many participants recalled non schematic items such as the skull...Unusual items resulted in better memory than schema theory predicted.

**Conclusions:**

**Critical Thinking:**

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Additional Studies that relate to Schema Theory:

## **C6- Evaluate two models or theories of one cognitive process with reference to research studies.**

Sketch of The Multi-Store Model of Memory

### Multi-Store Model of Memory Questions

1. What is the first step in forming new memories?
2. What needs to take place in order for sensory memories to become short-term memories?
3. What is rehearsal and what does it do? What happens if rehearsal does not occur?
4. What are the characteristics of Long-Term Memory?
5. How does Miller's Magic Number  $7 \pm 2$  relate to this model?
6. How does the serial positioning effect relate to this model?
6. What is the largest strength of this model? What is the largest weakness?

## Sketch of The Working Memory Model

### The Working Model of Memory

1. What does it mean if memory is an active process?
2. What is the role of the Central Executive?
3. How does the phonological loop work?
4. Why does one of the studies support this method?
5. What does the visuo-spatial sketchpad do?
6. What are the roles of the episodic buffer?
7. How are long-term memories created?
8. What are the strengths and limitations of the Working Model of Memory?



**C7- Explain how biological factors may affect one cognitive process.**

Biological Factor:

Cognitive Process:

Study:

Aim:

Method:

Findings:

Conclusion:

Critical Thinking:

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Biological Factor:

Cognitive Process:

Study:

Aim:

Method:

Findings:

Conclusion:

Critical Thinking:

**C8- Discuss how social or cultural factors affect one cognitive process.**

**Individualistic Culture:**

**Collectivistic Culture:**

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**Study: Hayne et al (2000)**

**Aim:** To examine the cross-cultural difference in adults' earliest memories.

**Method:** Interviewed adults from three cultural backgrounds (New Zealand European Decent, Maori, and Asian) on their earliest memories.

**Findings:**

- Maori Earliest Memories:
- Caucasian Earliest Memories:
- Asian Earliest Memories:

**Conclusion:**

**Critical Thinking:**

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**The Social-Interaction Model of Memory**

*Our autobiographical memories don't develop in a vacuum; instead, as children, we encode our memories of events as we talk over those events with the adults in our life. The more those adults encourage us to spin an elaborate narrative tale, the more likely we are to remember details about the event later.*

Individualistic cultures ask children to tell stories with \_\_\_\_\_  
and \_\_\_\_\_ questions.

Collectivistic cultures ask children to tell stories with \_\_\_\_\_  
\_\_\_\_\_ questions.

**Study:** Lietchman et al (2000)

**Aim:** To determine the role of questioning styles impact the autobiographical memories of children.

**Method:** Researchers observed conversations between mothers and children following a surprise event at school (their teacher returning from maternity leave with her new baby). The type of questions asked were recorded.

Three weeks later, children were interviewed by a researcher who had not been present during the original event and who had no information about the content of the parent-child interviews.

**Findings:** Children with mothers who asked High-Elaborative questions remembered \_\_\_\_\_ information than children with low-elaborative questions.

**Conclusions:**

**Critical Thinking:**

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**Study: Allport & Postman (1947)**

**Aim:** To determine how schemas impact the recall of images.

**Method:**

- Showed the image of the men arguing to both white and black participants
- Had white participants share their story with another white individual, who then shared it again.
- Black participants did the same thing with black participants.

**Findings:**

- White: After a few retellings, the black man became the aggressor.
- Black: After a few retellings, they were generally more accurate.

**Conclusion:**

**Critical Thinking:**

## **C9- With reference to relevant research studies, to what extent is one cognitive process reliable?**

### **Study: Loftus & Palmer (1974)**

**Aim:** To investigate whether the use of leading questions would affect recall in a situation where participants were asked to estimate speed.

**Method:** College students were shown a video of a car crash and asked to answer the question “About how fast were the cars going when they \_\_\_\_\_ into each other?”

- Smashed, Hit, Collided, bumped, contacted...All varying degrees of severity

**Findings:** The mean estimates of speed were highest in the “smashed” condition (40.8 mph) and the lowest in the “contacted” group (31.8 mph).

**Conclusions:**

**Critical Thinking:**

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### **Study: Loftus et al. (2012)**

**Aim:** To investigate whether misinformation could affect memory for a recently experienced, personally relevant, highly stressful event.

**Method:** Provided misinformation to 800 military personnel about the interrogator in a mock POW camp interrogation as part of their Survival School Training.

Questions asked about the physical appearance of the interrogator (Glasses? Weapon?)

Asked the participants to identify the interrogator by looking at photographs.

**Findings:** More than half of the participants inaccurately identified their interrogator.

**Conclusions:**

**Critical Thinking:**

**C9- With reference to relevant research studies, to what extent is one cognitive process reliable?**

**Additional Studies that relate to this prompt:**

**C10- Discuss the use of technology in investigating cognitive processes.**

Study:

Technology:

Aim:

Method:

Findings:

Conclusion:

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Study:

Technology:

Aim:

Method:

Findings:

Conclusion:

## **C11- To what extent do cognitive and biological factors interact in emotion?**

### **Le Doux's Theory of the Emotional Brain:**

#### **Study: Le Doux (1999)**

**Aim:** To determine the role that the brain in developing fear.

**Method:**

Made lesions in the brains of rats...Thalamus (Connects to the Amygdala)

Taught a rat to fear the sound of a bell by pairing it with electric shocks.

**Findings:** Rats with lesions in the thalamus did not transmit information to the amygdala and displayed no fear when hearing the bell.

**Conclusion:**

**Critical Thinking:**

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### **Lazarus' Appraisal Theory**

#### **Study: Speisman et al (1964)**

**Aim:** To investigate how the manipulation of cognitive appraisal could influence emotional responses.

**Method:** Participants watched a video of a tribal initiation ceremony. (Genital Cutting = Unpleasant).

Film was shown with three different soundtracks

- "Trauma": Emphasized Mutilation and Pain
- "Intellectualization": An anthropological explanation of what was happening.
- "Denial": Emphasized the willingness and pride of the tribal participants.

Measured heart rate and skin response (sweating).

**Findings:** "Trauma" condition led to much higher physiological measures of stress than the other two groups. They showed more emotion.

**Conclusions:**

**Critical Thinking:**

**C12- Evaluate one theory of how emotion may affect one cognitive process.**

**Flashbulb Memories:**

Strengths	Limitations

**Study #1: Brown & Kulik (1977)**

**Aim:** To investigate whether shocking events are recalled more vividly and accurately than other events.

**Method:** Asked 80 (40 white and 40 black) participants to recall circumstances of learned shocking events.

**Findings:** Participants had vivid memories about where they were, what they were doing, how they felt when hearing about shocking events. Whites remembered JFK better while Blacks remembered MLK.

More likely for unexpected & personally relevant events.

**Conclusions:**

**Critical Thinking:**

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**Study #2: Neisser & Harsh (1992)**

**Aim:** To test the theory of flashbulb memory by investigating to what extent memories about the challenger explosion would be accurate after a period of time.

**Method:**

- 106 students completed a questionnaire explaining details about finding out about the Challenger. (Within 24 hours of event)
- 2.5 years later, 44 students answered the questionnaire again. Listed 1-5 on how confident they were about their memories.

**Findings:**

- There were major differences between the original questionnaire and the follow-up. (Average accuracy: 2.95 of 7)
- Level of confidence was 4.17 out of 5

**Conclusions:**

**Critical Thinking:**



## **C12- Evaluate one theory of how emotion may affect one cognitive process.**

### **Study: Phelps et al. (2006)**

**Aim:** To investigate the neurological activity while recalling a flashback memory.

#### **Method:**

- Three years following the 9/11 attacks, used fMRI to measure brain activity when recalling an autobiographical memory and the memory of the 9/11 attacks.
- Two groups:
  - Downtown (near the attack)
  - Midtown (5 miles away from the attack)

#### **Findings:**

- Downtown group remembered more information about the attacks.
- Those near the attack experienced activity in their amygdala when recalling the event while those who were not as near did not show any difference between 9/11 and their other memories.

#### **Conclusions:**

### **Critical Thinking:**

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### **Study: Hirst et al. (2015)**

**Aim:** To investigate the consistency and confidence of flashback memories over a long period.

#### **Method:**

- Had participants from around the nation take surveys on 9/11 within a week of the attack.
- Had participants take the same survey three more times.
  - 1 year, 3 years, 10 years.
- Compared the results for consistency and confidence of memories.
- Examined how engagement with Media, Conversations, residency, personal impact, and emotional intensity impacted remembering.

#### **Findings:**

<b>Consistency of Memory</b>	<b>Confidence of Accuracy</b>
<ul style="list-style-type: none"><li>• Large decrease in accuracy of memory within the first year. Little change between year 1 and year 10.</li><li>• Factors had little impact on consistency</li><li>• Errors in memories were more likely to be corrected after years due to impact of media sources (movies).</li></ul>	<ul style="list-style-type: none"><li>• Confidence remained high throughout the study.</li><li>• Conversations and Media engagement led to stronger feelings of confidence.</li></ul>

#### **Conclusion:**

### **Critical Thinking:**