Influences on memory

Pt 1: Schemas
After doing this, he found the article. He then walked through the doorway and took a piece of candy out of his pocket. Next, he got some change and saw a person he knew. Subsequently, Joe found a machine. He realized he had developed a slight headache. After he aligned the original, Joe put in the coin and pushed the button. Thus, Joe had copied the piece of paper.
Bartlett’s (1932): War of the Ghosts

- One night two young men from Egulac went down to the river to hunt seals, and while they were there it became foggy and calm. Then they heard war-cries, and they thought: “Maybe this is a war-party.” They escaped to shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles, and saw one canoe coming up to them. There were five men in the canoe, and they said:
  - “What do you think? We wish to take you along. We are going up the river to make war on the people.”
  - One of the young men said, “I have no arrows.”
  - “Arrows are in the canoe.” they said.
  - “I will not go along. I might be killed. My relatives do not know where I have gone. But you” he said turning to the other, “may go with them.”
  - So one of the young men went, but the other returned home.
Bartlett’s (1932): War of the Ghosts

- And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water and they began to fight, and many were killed. But presently the young man heard one of the warriors say, “Quick, let us go home: that Indian has been hit.” Now he thought “Oh, they are ghosts.” He did not feel sick, but they said he had been shot.

- So the canoes went back to Egulac, and the young man went ashore to his house and made a fire. And he told everybody and said: “Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick.”

- He told it all, and then he became quiet. .When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried. He was dead.
Bartlett (1932)

- Examine meaningful material (folktales)
  - Method: “repeated reproduction” of prose (at longer intervals)
  - Examine errors

- Results:
  - Memory is (re)constructive not reproductive
    - Omissions
    - Additions
  - Successive recalls normalized
    - Became consistent with knowledge (culture)

- Conclusions
  - Use existing schemas
  - Memory for event plus person’s knowledge, experience and expectations
Schemas and scripts

- Schemas: active organization of past experiences
  - Generic information or general knowledge influences memory
  - Heuristic: a good guess
  - Top-down processing: fills in the gaps

- Scripts:
  - Semantic knowledge for typical action sequences
  - e.g. restaurant script
  - Bower et al (1979) – read then recall story “The Dentist”

- How is the accuracy of memory influenced by knowledge?
  - Will consistent or inconsistent info be recalled?
Brewer & Treyens (1981)

- Participants brought into this room to wait for experimenter
- Told it was office of experimenter
- Waited 35-60s
Recall items in office picture.
Brewer & Treyens (1981)

- **Study phase:**
  - Ss in wait room <60s, then moved to next room

- **Test phase:**
  - Ss told to recall everything about waiting room
  - Incidental learning test

- **Results:**
  - High recall for “office” items (29/30)
  - Poor recall for “non-office” items (8/30)
  - Reconstruction errors: *false*ly recalled office items
    - 30% recall seeing books

- **Conclusion:**
  - Schema-consistent items better than schema-inconsistent
McDermott & Chan (2006)

- **Study phase:** Read sentences
  - “The children’s snowman vanished when the temperatures reached 80.”

- **Test:** Fill-in sentences exactly as seen in study
  - “The children’s snowman ______ when the temperatures reached 80.”

- **Results**
  - Errors on 1/3 of sentences
  - Error example: “vanished” became “melted”

- **Conclusion**
  - “Pragmatic inference”
  - Expectations change memory; info implied by sentence
Bransford & Johnson (1973)

- **Question**
  - What is the effect of inference on memory?

- **Method**
  - **Study phase**: read sentences
    - “He was *pounding* the nail when…” OR “He was *looking* for the nail when…”
  - **Test phase**: indicate if sentence is old/new
    - “He was using a hammer to fix…”

- **Results**
  - More errors when study sentence allowed inference (1st example)
Look at the picture carefully.
Draw picture.

Schemas fill-in missing information
Which stage of memory is influenced by schemas?

- Encoding: selection and interpretation
  - Construction view: make sense out of information
  - Pragmatic view: pay attention to relevant information
- Storage: integration
  - Abstraction: store meaning without exact wording
- Retrieval:
  - Memory reconstruction
Recall the story from beginning of class.

- Trafimow & Wyer (1993)
  - 4 stories: photocopying, cashing a check, making tea, taking the subway
  - Relevant and irrelevant details

- IV: order of details
  - Identifying detail presented at beginning or end

- Results
  - Identifier at beginning: 23% recall
  - Identifier at end: 10% recall

- Conclusion
  - *Schemas* provide framework for comprehension and memory
Sulin & Dooling (1974)

- Participants read identical stories but main character was varied:

  - *Gerald Martin (or Adolf Hitler)* strove to undermine the existing government to satisfy his political ambitions. Many supported his efforts.

  - *Carol Harris (or Helen Keller)* was a problem child from birth. She was wild, stubborn, and violent.”
Sulin & Dooling (1974)

- How does knowledge of a theme change memory?
  - Study: Read paragraph about person
  - Test: decide if old or new sentences
    - “He was obsessed to conquer the world.”
    - “She was deaf and blind.”

- Independent variables:
  - Name of main character (at study or at test)
  - Delay (before test)

- “Thematic effect”
  - Knowledge of characters distorted recognition
  - Use schemas more with increased delay
Read sentence. Then count to 5. Then answer the question.

- The girl broke the window on the porch.
- The tree in the front yard shaded the man smoking his pipe.
- The hill was steep.
- The sweet jelly was on the kitchen table.
- The tree was tall.
- The old car climbed the hill.
- The ants in the kitchen ate the jelly.
- The girls who lives next door broke the window on the porch.
- The car pulled the trailer.
- The ants ate the sweet jelly that was on the table.
- The girl lives next door.
- The tree shaded the man who was smoking his pipe.
- The sweet jelly was on the table.
- The girl who lives next door broke the large window.
- The man was smoking his pipe.

- Broke what?
- Where?
- What was?
- On what?
- Was what?
- What did?
- Where?
- Lives where?
- Did what?
- What did?
- Who does?
- What did?
- Where?
- Broke what?
- Who was?
“Old” or “new”? 

- The car climbed the hill.
- The girl who lives next door broke the window.
- The old man who was smoking his pipe climbed the steep hill.
- The tree was in the front yard.
- The ants ate the sweet jelly that was in the kitchen.
- The window was on the porch.
- The barking dog jumped on the old car in the front yard.
- The tree in the front yard shaded the man.
- The ants were in the kitchen.
- The old car pulled the trailer.
- The tree shaded the man who was smoking his pipe.
- The ants ate the jelly on the kitchen table.
- The girl who lives next door broke the large window on the porch.
How do people acquire and remember ideas?

Study sentences

IV: # of components in sentence

One: The hill was steep.

Two: The ants in the kitchen ate the jelly.

Three: The ants ate the sweet jelly that was on the table.

Four: The girl who lives next door broke the large window on the porch.

Recognition test w/ confidence ratings
Bransford & Franks (1971)

- Test: old or new sentence / confidence rating

![Graph showing confidence ratings for old and new sentences](image-url)
Integrative memory

- Bransford & Franks (1971) results:
  - “Semantic integration”
  - *False alarms*: related information was combined

- Technical accuracy vs. content accuracy
  - Exact vs. gist

- Is our memory good or bad?
  - Depends on if need exact or gist
  - Depends on if to-be-remembered is consistent or inconsistent with schema
  - Depends on delay before testing
Schemas and memory selection

- What details are remembered better?
  - Typical (schema-consistent)
  - Atypical (schema-inconsistent)

- Smith & Graesser (1981)
  - 10 passages with typical and atypical activities
  - Recall/recognition tests – variable delays

- Results:
  - Remember typical better than atypical
  - IF correct for guessing: atypical better than typical
Davidson (1994)

- Read scripts (e.g. “going to the movies”)
  - IV: interruptions and bizarre events
- Recall events (1hr, 48hr, 1wk delay)
  - Intentional learning

- Results
  - Short delay: schema-inconsistent recalled better (especially interruptions)
  - Long delay: schema-consistent recalled equally well

- Conclusions
  - High recall for events that interrupt normal story
Marsh et al. (2006)

- **Method:** read/remember statements and who said them (Chris or Pat)
  - Afterwards told gender of names
  - Source monitoring task: indicate who said statement
- **Results:** Biased by what schema-consistent (stereotype-consistent!) information
Gender stereotypes
Dunning & Sherman (1997)

- Study: read sentences
  - “The women at the office like to talk around the water cooler.”
  - “The women at the office liked to talk sports.”
- Test: recognition memory (‘old’ or ‘new’)
- Results for new sentences
  - Consistent: 29% false alarms
  - Inconsistent: 18% false alarms
- Conclusion: use stereotypes as schema
Summary

● Question:
  ● How does knowledge affect accuracy of memory?

● Methods:
  ● Study phase: read story, sentences, or other info
  ● Test phase: recall or recognition for study phase info
  ● DV: accuracy, omissions, additions, false alarms

● Conclusions:
  ● Memory (especially after delay) is normalized to match schema-consistent knowledge