

### Comprehension

- Processes that precede comprehension:
  - Word Recognition
  - Sentence Parsing
  - Meaning Access
- Then, integrate information with knowledge = Sentence and Discourse Comprehension
- Question of Constructive vs. Minimal
  - Minimal indicates that the processing does not extend much beyond the actual information
  - Constructive refers to inferences that are more elaborate

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### Coherence

- Gernsbacher (1990) proposed 4 forms of coherence:
  1. Referential coherence
    - Consistency in what/who is the referent
  2. Temporal coherence
    - Consistency in when events occur
  3. Locational coherence
    - Consistency in where events occur
  4. Causal coherence
    - Consistency in why events occur

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### Cohesion

- “The same entities are referred to in successive sentences” (Harley, 2008, p. 362 based on Bishop)
- Strive to maintain coherence and cohesion
- In other SLP sources, the term cohesion is used for coherence, as described on the prior slide.

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### Memory is unreliable

- Eyewitness account studies
- Example of John Dean, Watergate
- People tend to remember meaning of discourse, not the actual words or text
  - Some evidence of verbatim memory 1 hour later, 2 days later, but significantly reduced 5 days later
  - More likely to recall verbatim rather than gist if there is emotional content
  - Importance affects memory, but how do we know what is important?

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### Prior Knowledge

- For difficult to understand information, then context prior to the information is key
  - More details recalled
- Context after the content can improve recall if the material is not difficult to understand
- Context can improve comprehension, not just recall
  - Provides a frame for understanding text
- Text pp. 366-368
  - Pictures provide context (e.g., balloon story)
  - Familiarity provides context
    - Clothes washing or cultural wedding event examples
  - Title or topic provides context (e.g., with hocked gems...)

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• If the balloons popped, the sound wouldn't be able to carry since everything would be too far away from the correct floor. A closed window would also prevent the sound from carrying, since most buildings tend to be well insulated. Since the whole operation depends on a steady flow of electricity, a break in the middle of the wire would also cause problems. Of course, the fellow could shout, but the human voice is not loud enough to carry that far. An additional problem is that a string could break on the instrument. Then there could be no accompaniment to the message. It is clear that the best situation would involve less distance. Then there would be fewer potential problems. With face to face contact, the least number of things could go wrong.

• Bransford and Johnson, 1973

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• With hocked gems financing him, our hero bravely defied all scornful laughter that tried to prevent his scheme. “Your eyes deceive,” he had said. “An egg, not a table correctly typifies this unexplored planet.” Now three sturdy sisters sought proof. Forging along, sometimes through calm vastness, yet more often very turbulent peaks and valleys, days became weeks as many doubters spread fearful rumors about the edge. At last from nowhere welcome winged creatures appeared, signifying momentous success.

• Dooling and Lachman, 1971

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**Inference**

- Def= going beyond the meaning of the literal portions of a text to derive meaning
- Inference can support meaning and recall
  - Also can interfere, we think we remembered something that wasn't there
  - Gerald Martin vs. Adolf Hitler example (p. 369)

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**Three types of inference**

- Logical inferences
  - Follow from the word meanings
  - *Vlad is a bachelor* ....leads to inference Vlad is male
- Bridging inferences
  - Aka backward inferences
  - Relate new info to previous info, maintain coherence
  - *Vlad drove to Memphis. The car kept overheating.*
- Elaborative inferences
  - Aka forward inferences
  - Extend beyond text to the world
  - Use for predictions
  - Elaborative inferences may not be made until recall, unlike bridging inferences that may be automatic

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### Reference and Co-Reference

- Reference (knowing what things refer to) is key to comprehension
- Co-reference = 2 or more noun phrases that refer to the same thing (e.g., Boris, vampire, he)
- Antecedent = preceding info that has the referential information
- Anaphor = material that cannot be understood without other linguistic information (usually antecedent)
- Anaphoric resolution = process of backward inference to determine the reference and maintain coherence

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### Anaphoric Resolution Strategies

1. Parallel function – match anaphors to antecedents in the same sentence positions
  - Vlad sold Dirk his broomstick because he hated it.
  - Vlad sold Dirk his broomstick because he needed it.
2. Gender information - for pronouns processed automatically, unless conflict
3. Frequency – mentioned more often creates bias
4. Proximity – easier to locate antecedents that are closer
5. Background knowledge and elaborative inference - more complex aspects of resolution
  - Vlad sold his piglets to Dirk because he had become a vegetarian.

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### Pronoun reference

- Focus – when information is foregrounded or still in focus, then pronouns can be processed more easily
  - Vlad was driving to Philadelphia
    1. He was thirsty. Referent for “he” is in explicit focus
    2. It broke down. Referent for “it” is in implicit focus.
- Informativeness, working memory load, and focus interact to affect processing of pronouns.

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### Referent Accessibility

- Common ground = Shared information in a conversation
  - All speakers believe the info and believe it is shared
  - Presupposition
- Restricted search hypothesis – an initial search for referents in discourse is restricted to common ground
- Unrestricted search hypothesis – in contrast, no restriction for referent search
  - Research suggests that searches for referents are not restricted, although common ground still plays a role in determining referent
- First mention factor – Referent mentioned first is more easily accessed than one mentioned last (despite recency effect)
- Given vs. New information – speakers link utterances in a discourse such that new info connects to prior info

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### Propositional Networks

- Defining Proposition
  - Text def = smallest unit of knowledge that stands alone with truth value
  - General def = an idea
  - Defined by other linguists = noun and verb
- Network has nodes for words, and connections are relations between words
- Fan Effect
  - Proposition networks can explain fact retrieval from reading: The more facts, the slower the retrieval
  - Activation fans or spreads out to all associates
- Unable to explain inferencing processes

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### Story Grammars

- Typical framework for stories in mainstream American literature
- Story grammars are descriptive
- Research shows that knowledge of story grammar supports text processing and representation (and therefore comprehension).
- Limitations as a Model:
  - Elements are not agreed upon
  - Do not really explain underlying processes

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**Schema-based Models**

- Schema = means for organizing knowledge, like a computer file in the brain, Piaget
- Script = more specific type of schema used to represent procedural information or familiar event sequences
  - E.g., going to restaurant, going to doctor's
- Scripts describe processes in resolving anaphoric reference or constructing elaborative inference
  - Events that interrupt script will be more salient and better recalled than routine events (like a "problem")
  - Irrelevant details will not be recalled

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**Mental Models**

- Comprehension involves constructing a mental model as info is heard or read
- Mental Model – is the representation of the information
  - Form mental models about specific things
  - Mental models support mental images
- Various information can be represented:
  1. Spatial
  2. Causal
  3. Temporal
  4. Characteristics of people
  5. Characteristics of objects
- Some aspects may be stored separately – spatial separate from causal
- "Text processing is dynamic," p. 385, so mental models are updated in the moment

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**Kintsch Construction-Integration Model**

- Construction Phase
  - Word meanings activated, propositions formed, inferences made
- Integration Phase
  - Coherent structure is created by integrating inter-related items in network
  - Resolution of contradictions or incorrect inferences
- Input is managed in short-term memory as processing occurs in cycles
- Story representation is result of (1) story aspects and (2) reader goals – an interaction
  - Working memory limitations can explain reading comprehension differences

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### Individual Comprehension Differences

- Less skilled readers make fewer inferences and have more difficulty integrating text across utterances.
  - Working memory is one factor
- Prior knowledge is an important factor
- Skilled comprehenders suppress irrelevant or incorrect information
  - Reading activates A LOT, but need to suppress
- PQ4R – Comprehension Strategy
  - Preview, Questions, Read, Reflect, Recite, Review

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