1. **Syntactic development**
   Putting words together

2. **Syntactic development**
   - Several weeks after the first word, children’s vocabulary grow rapidly as new words are learned every day.
   - Young children use their words in a variety of contexts, but limit their messages by speaking one word at a time.
   - At the latter half of the 2nd year, they begin putting words together.
   - Syntactic development seems to take place unnoticed, with no explicit instruction.

3. **The nature of syntactic rules**
   - Universal grammar (UG)
   - Government and binding theory (GB)
   - The goals of any theory of grammar are
     1. Universality
     2. Learnability
   - Autonomous of other cognitive systems
   - Principles and parameters (e.g., null-subject parameter)

4. **Main components of a grammar**
   - Phrase structure
   - D-structure
   - Transformation rules
   - S-structure

5. **Phrase structures**
   - Tree diagrams
   - Lexical category vs. functional category
   - Argument structure
     --- John runs (to the store).
     --- John sees Mary (writing her book)
     --- John put the book on the shelf last night.

6. **Studying syntactic development**
   - Longitudinal study
   - Spontaneous speech
   - Controlled experiment

7. **Entering the complex linguistic system**
   - How do children manage to break up the stream of sounds they hear into basic units such as words and morphemes?
   - Adults provide strong intonational or prosodic evidence about word and phrase boundaries.
   - Once the child has broken the stream of speech into words, he or she may use other bootstraps into the syntactic system.
     1. Semantics
     2. Pragmatics
3. grammar

**Measuring syntactic growth**
- Mean length of utterance (MLU)—average length of a child’s sentences scored on transcripts of spontaneous speech.
- Length is determined by the number of morphemes.
- Rules for calculating MLU (Figure 5.4, p.149)

**Stages of syntactic growth**
- Stage I: MLU 1.0 ~ 2.0
- Stage II: MLU 2.0~2.5
- Stage III: MLU 2.5~3.0
- Stage IV: MLU 3.0~3.5
- Stage V: MLU 3.5~4.0

**Index of productive syntax**
- 100 spontaneous speech utterances from a child
- On the score sheet, mark the use of a variety of structures in four categories: noun phrases, verb phrases, questions and negation forms, and sentence structure.
- The score is the total number of points awarded for each structure

**Two-word utterances**
- Examples in Table 5.1, p.151
- novel and unique
- dominated by content words
- telegraphic speech
- semantic relations (Table 5.2, p153)
- consistent word order

**Limited scope formula vs. semantic relation formula**
- Child 1
  - My dog
  - My shoe
  - My hat
  - My hand
  - My chair
  - My house
  - My book
- Child 2
  - Kendall chair
  - Bill house
  - Bill book
  - Mommy hand
  - Lady hat
  - My penny
  - Our car

**Early grammar**
• Limited scope formula
• While the children were able to combine the novel nouns with other words, they were not able to do so for novel verbs.
• At a slightly later stage, children are able to learn new transitive verbs, especially if they are presented in sentence frame include a noun actor.
• Children use semantics to provide the key bootstrap into the linguistic system.

14 □ Comprehension of syntax
• Diary studies
• Act-out tasks
• Direction tasks
• Picture-choice tasks
• Preferential looking paradigm (Figure 5.7, p157)
• Comprehension is in advance of production
• Cues: prosody, semantics, syntax, environmental and social context

15 □ Different sentence modalities

16 □ Children’s production of negatives
1. No go movies.
   • No sit down.
   • No Mommy do it.
2. I no like it.
   • Don’t go.
   • I no want book.
3. You can’t have this.
   • I don’t have money
   • I’m not sad now.

17 □ Semantic categories of negation
• Nonexistence: “no cake”
• Rejection: “no wash hair”
• Denial: “that not Daddy.”
• These categories of negation appeared in children’s speech in the order given above.
• Some children use no + sentence to express rejection and internal-no to express denial, but not others.
• The development of negation reflects a complex interaction of syntactic, semantic, pragmatic and input factors.

18 □ Questions
• Rising intonation on a declarative sentence
• Yes/no question (stage III)
• Wh-questions
• Children’s production
1. Omitting auxiliary
   What that?
   Where Daddy go?
2. Include the auxiliary but do not consistently switch around with the subject
   Where are you going?
   What she is playing?
19 □ Invariant order of acquisition

- What, where, who before when, how, why
- Reasons
  1. The concepts that are required for encoding how, when and why questions, including manner, time and causality, are more abstract and developed later than concepts encoded in what, where and who questions.
  2. Linguistic complexity
     - What, where, who questions can be answered by a single word; when, how, why questions need whole sentences.

20 □ Long distance questions

- How did Jane think she could fix the shelf?
  - Using a hammer and nails
  - Because she took a course in woodworking.
- How did Jane know she could fix the shelf?

  - Q: How do children acquire these complex rules?

21 □ Later developments in preschoolers

22 □ Passives

- Passives are rare in English and so in children’s spontaneous speech.
- Agent and object are reversed in passives in English, so this construction can tell us how children acquire word order.
- Younger children produced full passives less frequently than truncated passives.
- Children can understand the irreversible passives earlier than the reversible ones.

23 □ Mistakes in passives

- They consistently reversed the agent and object.
- 3 or 4 year olds use word-order strategy
  ---- noun-verb-noun = agent-action-object
- This is not a universal strategy.
- The typology of a language and the importance of the passive to a particular language, will influence the timing of its development.

24 □ Coordinations

- Sentential coordination
  - I’m pushing the wagon and I’m pulling the train.
- Phrasal coordination
  - I’m pushing the wagon and the train.
- Sententials do not develop before phrasals.

25 □ Semantic factors that influence the acquisition of coordination

- Additive
  - ex. Maybe you can carry this and I can carry that.
- Temporal relations
Language Acquisition

ex. Alice’s going home and take her sweater off.
• Causal relation
ex. She put a bandage on her shoe and it maked it fell better.

26 Relative Clauses (p. 173)
• Children do not develop the full structural knowledge of this construction until long after
they reach school.
• Object relative clauses before subject relative clauses.
Let’s eat the cake what I baked.
• Often children omitted a relative pronoun or they substituted an incorrect pronoun, usually
what
• Children find it easier to add a clause at the end of a sentence rather than in the middle,
since this minimizes constraints on processing.

27 Beyond the preschool years

28 Anaphora
• John said that Robert hurt himself.
• John said that Robert hurt him.
• Principle A: a reflexive is always bound to a reference within the same clause.
• Principle B: an anaphoric pronoun cannot be bound to a referent within the
same clause

29 Principle C
• When he came home John made dinner.
• He made dinner when John came home.
• Principle C: Backward coreference is only allowed if the pronoun is in a
subordinate clause to the main clause

30 When do children know these principles?
• Judge the truth of sentences paired with pictures (p. 176)
• By age six, children knew Principle A, but still making errors on pronouns.
• Children have difficulties with Principle B
• Principle C is not firmly controlled by children until middle school years

31 Interpreting empty subjects
• The wolf is glad to bite.
The wolf is easy to bite.
• Children at young age act out both types of the sentences by making the wolf bite the
duck.
• By age 6, children sometimes made the non-named animal do the biting, but still had not
learned the adjective requirement.
• Children do not reach adult levels of performance until age 10 or 11.

32 Interpreting empty subjects 2
• Children’s development of these structures may be accelerated by merely
asking them periodically to act out examples of the two types of sentences,
without any feedback at all.
• Simple manipulation of the input such as merely providing children with extra
opportunity to work on particular constructions can accelerate development.
Knowledge vs. processing

- During early childhood, a child’s grammar is not the only system that is undergoing development. A child’s ability to comprehend and produce sentences in real time is developing.
- Even if children have the grammatical knowledge necessary to generate a particular sentence, more than this is needed to produce or comprehend it.

Immature processing system

- Passive sentences with action verbs are not produced until age 4 or 5 by children learning English.
- Structural priming study with 3-year-olds (Bencini & Valian, 2006)
- If children are first asked to repeat a full passive sentence, they are more likely than children who repeated an active sentence to subsequently describe an event using a full passive.
- Children learning languages with frequently passive are able to produce passive easily by age 3.

Technology measuring language processing

- Eye movement
- Electroencephalography (EEG)
- Event-related potentials (ERPs)
- Semantic incongruent—N400
- Syntactic unexpected—P600
- Figure 5.9. (P. 181)