Shallow Processing

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Processing during acquisition

- Building a grammar during acquisition relies on input
- Input must be processed for it to become intake
  - What if processing mechanisms operate differently in L1 and L2 acquisition?
- Justifiable with data demonstrating:
  - Difficulty with integration of information, online (lexical v. structural v. prosodic v. pragmatic)
  - Processing time increase: less automaticity?
  - Transfer
  - Maturation’s effect on memory systems

Overview: Clahsen & Felser, 2006

- Child and adult learners processing of:
  - Morphology
  - Structural ambiguity
  - Syntactic dependencies

- Accounting for differences:
  - Confounding factors (e.g., cognitive limitations)
  - Procedural memory reductions
  - The Shallow Structure Hypothesis

Processing morphology

- Dual mechanism: ERP evidence, adult monolinguals
  - Full-form storage: misapplied irregular inflections lead to N400-like effects
  - Decomposition regularizations lead to P600-like effects

- Likewise for child L1 and adult L2 learners:
  - Data support the dual mechanism model
  - Any delays in processing time are attributable to incomplete acquisition
  - [Speeded production, ERP violation,

Quick notes on ERPs

- During neuronal activity, active neurons emit voltage
- This electrical activity is measurable using electrodes attached to the scalp, at different locations
- The measurement unit is µV (microvolts)
- The data can inform about timing, direction (negative, positive) and amplitude of voltage

Processing syntactic ambiguity

- Exploiting structural v. lexical information during sentence processing:
  - A preposition × attachment design
  - Children, L2ers, adults
  - Self-paced listening

The doctor recognized the nurse of the pupils …
The doctor recognized the nurse with the pupils …
… who was feeling very tired.
… who were feeling very tired.
Children ≠ Adults
• Children systematically apply phrase-structure based principles:
  - Predicate proximity (high-spanners) or recency (low-spanners)

L2ers ≠ Adults, Questionnaire
- Of-NP1 vs With-NP1
- German L1, Greek L1, English L1

L2ers ≠ Adults, Self-paced reading
- Of-NP1 vs Of-NP2 vs With-NP1 vs With-NP2
- Segment 4 (disambiguating region)

Processing syntactic dependencies
- Active Filler Strategy, Minimal Chain Principle:
  - What book did Bob say Sue read to the children from?
  - The nurse who the doctor argued that the rude patient had angered is refusing to work late.
  - The nurse who the doctor's argument about the rude patient had angered is refusing to work late.

- Children establish filler-gap dependencies in ways resembling adult native speakers
- L2ers don't seem to posit intermediate gaps as do adult native speakers:
  - No evidence of mental reactivation of fillers at gap positions
  - No intermediate gap effect

Summary
- Continuity for L1 acquisition:
  - L1 acquirers and adult monolinguals engage in similar processing routines
  - Basic processing routines don't need to be acquired
- Weird results for L2 acquisition:
  - L2 acquirers and adult monolinguals seem to differ along a number of measured parameters...
  - Cognitive differences?
  - Reduced availability of procedural memory?
  - Shallow processing!
- "...the syntactic representations adult L2 learners compute for comprehension are shallower and less detailed than those of native speakers" (Clahsen & Felser, 2006, p. 32)

- L1/L2 differences in ambiguity resolution and processing off long-distance dependencies
- Absence of early anterior negativity effects in some ERP studies
- Possibly not unique to language learners: "good enough" representations (Ferreira, Bailey & Ferraro, 2002)
Summarizing Perception

- Competence:
  - 1 or 2 grammars?
  - 1 or 2 lexicons?

- Performance (and perception in particular)
  - Probably only one parser
  - Testing for this is (perhaps) impossible!

Further questions to pursue

- How do bilinguals incorporate information from different levels of language during perception?
- Is Lx always (or only sometimes) active during Ly unilingual processing?
- Are both languages fully activated in bilingual processing (code-switched discourse)?
- What triggers code-switches in production?
- … and many more!