Painting a more detailed picture of children’s early language development

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Outline

• Over the past 25 years new methods for testing children have given us a much more detailed picture of early language development
• Comprehension methods and children’s understanding of word order
• Production methods and children’s knowledge of verb endings
• Elicitation methods and children’s ability to formulate Wh- questions
• How can these methods be used in the assessment of individual children?
New Methods

• New experimental techniques have allowed us to identify knowledge and abilities in toddlers that did not show up in studies using less sensitive methods.

• At what age are children able to understand the significance of SVO word order?
New Methods

• Item-based production methods have allowed us to identify areas of weakness in children’s knowledge that may not show up in analyses of their spontaneous speech.

• Does the child’s early production reflect the learning of all-or-nothing rules?

• Or is there a developmental trajectory to the learning of verb endings and Wh- questions?
Understanding Word Order

- Understanding Word order is critical to understanding who did what to whom in English.

Dog bites man!

versus

Man bites dog!
Understanding Word Order

• Akhtar & Tomasello (1997) assessed children’s knowledge of word order using an Act-Out Task with Novel Verbs
  – Make Big Bird dack Cookie Monster

• Children could not do this task (i.e. mixed up who was doing what to whom) until around 3 years of age
But is Act Out the best method for assessing young children’s understanding of word order?

- Act Out is potentially quite demanding for young children

Child needs to:

- Remember the meaning of novel verb
- Remember the order in which the characters were mentioned
- Avoid being distracted by preference for any particular character
Preferential Looking

- C sits on M’s lap
- Watches 2 screens as sentence plays
- Camera records eye movements
- Which screen does C look at most?
Understanding Word Order

• Gertner, Fisher & Eisengart (2006) used this kind of set-up to investigate young children’s understanding of word order

– The bunny is glorping the duck
– He is glorping the duck
Understanding Word Order

• Found that children as young as 21 months looked at the correct video in both cases.

• Children appear to understand the significance of SVO word order in English before their second birthday.
Understanding Word Order

• Noble, Rowland & Pine (2011) used this method to replicate Gertner et al. with 24-month-olds

- The teddy is klimping the frog
- The frog is glorping the teddy
Understanding Word Order

• This pointing method is quite flexible and engaging for young children (stickers help)
• It could easily be used to assess individual children’s understanding of word order
• If you run multiple (i.e. 8-10) trials, you can also look for performance that is significantly better than chance (see accompanying materials)
• 7/8 or 9/10 correct points is significantly better than chance by a Binomial test
• You can check this out yourself by running a Binomial test over the internet at this link: http://stattrek.com/online-calculator/binomial.aspx#binprob
Understanding Word Order

• Pointing method can also be used to assess understanding of passives
  – Marge was eaten by Homer
  – Bob was pulled by Wendy
Understanding Word Order

• Abbot-Smith, Chang, Rowland, Ferguson & Pine recently used this method to show that 3-year-olds understand passives even when the passive includes a made-up verb
  – Marge is being klimped by Homer
  – Wendy is being glorped by Bob
Verb Endings

• English-speaking two-year-olds often leave off verb-endings
  – That go there
  – We go park yesterday

• This is also a particular feature of the language of older children with Language Impairments
Verb Endings

• Some researchers argue that young children (and children with language problems) see these endings as optional and leave them off different verbs at random
  – Wendy go work = Bob stay home

• Others argue that children are much better at putting these endings on some verbs than others
  – Wendy goes work > Bob stay home
How can we test these ideas?

• By eliciting verbs in 3rd Person Singular Present Tense Contexts
  – Every day Bob and Wendy build something. Bob builds a house and Wendy ...

• Across a range of different verbs
  – Make versus Build
  – Go versus Stay
Verb Endings

• Räsänen, Ambridge & Pine (2014) used this method to show that 3-to 4-year-olds were more likely to put 3sg present tense -s on verbs that tended to occur with this ending in parents’ speech.

  – Wendy goes work v Wendy stay home

• Matthews & Theakston (2011) report similar findings for past tense endings.
Verb Endings

• Children’s ability to use verb endings is not an all-or-nothing phenomenon
  – Develops gradually in a way that reflects exposure to particular forms in the input

• There is a developmental trajectory to the learning of verb endings
  – Understanding this trajectory might help us to speed up learning in children with language problems
Verb Endings

- Production method could be used to identify areas of weakness in children’s knowledge of verb endings (and hence where they might benefit from practice or enriched input)
- 10/10 correct uses with high frequency verbs is significantly greater than 5/10 correct uses with low frequency verbs by a Chi-square test
- You can run a Chi-square test yourself over the internet by clicking on this link: http://vassarstats.net/tab2x2.html
- Method not restricted to looking for frequency effects (e.g. could be used to look for effects of phonological complexity – you would just need a different set of verbs)
Wh- Questions

• English-speaking children sometimes make non-inversion errors when forming Wh-questions
  – Where he will go?
  – Why he can do that?

• Children with language impairment tend to have particular problems with Wh-questions
Wh- Questions

• Rowland & Pine (2000) suggested that children make errors like:
  – Why he can do that?

• When they don’t have a well-learned pattern that they can use to formulate the correct question
  – Why can ...?
How can we test this idea?

• With a little ingenuity
  – i.e. some questions to which the child does not know the answer

• And a talking dog
  – i.e. a cuddly dog, with a speaker fitted inside it and an MP3 player
Wh- Questions

• Ambridge, Rowland Theakston & Tomasello (2006) used this method to get 3- and 4-year-olds to ask Wh- questions

• Found that children made more errors with high v low frequency Wh-word + auxiliary sequences
  – 25% What they do want?
  – 4% What they are drinking?
**Wh- Questions**

- Children’s ability to formulate Wh-questions is not an all-or-nothing phenomenon
  - Develops gradually in a way that reflects exposure to particular sequences in the input

- There is a developmental trajectory to the learning of Wh-questions
  - Understanding this trajectory might help us to speed up learning in children with language problems
Wh- Questions

• This method could be used to identify areas of weakness in individual children’s ability to formulate Wh- questions (and hence where child might benefit from enriched input)

• 10/10 correct uses with high frequency sequences (e.g. What is) is significantly greater than 5/10 correct uses with low frequency sequences (e.g. What can) by a Chi-square test

• You can run a Chi-square test yourself over the internet by clicking on this link: http://vassarstats.net/tab2x2.html
Conclusion

• Thanks to modern methods we know a lot more about early language development than we did 25 years ago
  – Early knowledge that does not show up in tasks with less sensitive measures
  – Areas of weakness that do not show up in naturalistic speech samples

• Modern methods could be used to identify areas of strength and weaknesses in individual children’s language

• This would allow the development of targeted interventions tailored to the needs of individual children
Thank you for listening!

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