How complex is that sentence?

A Proposed Revision of the Rosenberg and Abbeduto D-Level Scale

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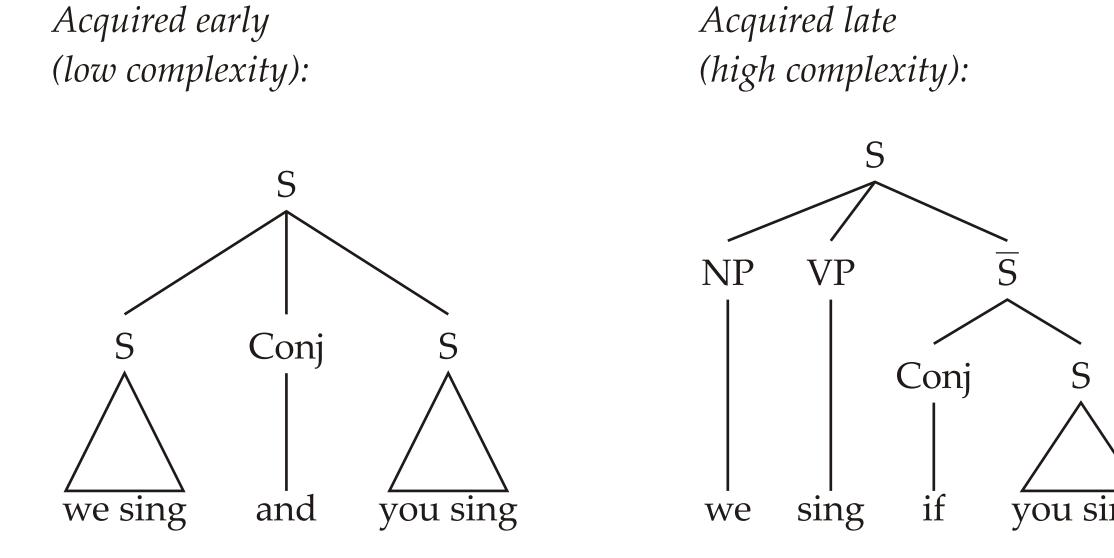Artificial Intelligence Center, The University of Georgia

BACKGROUND

Sentence complexity is important for assessing language acquisition and language impairment. Snowdon et al. (1996) used it to predict Alzheimer's disease from writing samples taken 50 years before the onset of symptoms.

The most natural measure of sentence complexity is the age at which children acquire sentences of different types.

This is the basis of the **D-Level (developmental level) scale** of Rosenberg and Abbeduto (1987). A child's D-Level is the level of the most complex sentences that he or she produces.

Complexity is mostly a matter of sentence embedding (sentences within sentences), but some types of embedding are acquired earlier than others.

Note: We make no specific claims about syntactic or semantic structure. Our complexity ratings are based on the language acquisition literature.

ORIGINAL D-LEVEL SCALE

(Rosenberg and Abbeduto 1987)

Level 1 Infinitival complements with same subject as main clause
Try to brush her hair.   I am going to meet John.

Level 2 Sentences with *wh*-complements
Remember where it is.   I will tell you what's happening.

Sentences joined by coordinating conjunctions
I brought candy and Peter cleaned up.

Subjects consisting of 2 NPs joined by a conjunction
John and Mary left early.

Level 3 Relative clause modifying object of main verb
The man scolded the boy who stole the bicycle.

Complement clause serving as object of main verb
John knew that Mary was angry.

Level 4 *-ing* form as complement
I felt like turning it.

Comparatives with object of comparison
John is older than Mary.

Level 5 Relative clause modifying subject of main verb
The man who cleans the rooms left early today.

Embedded clause serving as subject of main verb
For John to have left Mary was surprising.

Nominalization serving as subject of main verb
John's refusal of the drink angered Mary.

Level 6 Sentences joined by a subordinating conjunction
They will play today if it does not rain.

Level 7 More than one kind of embedding in a single sentence
John decided to leave Mary when he heard that she was seeing Mark.

WHY REVISE IT?

The original scale does not assign a rating to every sentence. Thus you cannot determine the average sentence complexity of a text or speech sample.

Also, evidence from child language indicates that the original Levels 5 and 6 should be swapped.

OUR CHANGES

Added Level 0 for simple sentences, including those with auxiliaries (following Cheung and Kemper 1992)

Wh-sentences rated same as corresponding declarative sentences

Several moderately complex structures added to Level 3

Minor additions to Levels 4 and 6

Original Levels 5 and 6 swapped because of developmental evidence (Bowerman 1979, Miller 1981)

REFERENCES (many more in the full paper)

Bowerman, M. (1979) The acquisition of complex sentences. *Language Acquisition*, ed. P. Fletcher and M. Garman, pp. 285-305. Cambridge University Press.

Cheung, H., and Kemper, S. (1992) Competing complexity metrics and adults' production of complex sentences. *Applied Psycholinguistics* 13:53-76.

Miller, J. F. (1981) Assessing Language Production in Children. Baltimore: University Park Press.

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Snowdon, D. A.; Kemper, S. J.; Mortimer, J. A.; Greiner, L. H.; Wekstein, D. R.; and Markesbery, W. R. (1996) Linguistic ability in early life and cognitive function and Alzheimer's disease in late life: Findings from the Nun Study. *JAMA* 275:528-532.

OUR REVISED D-LEVEL SCALE

Level 0 Simple sentences, including *wh* questions
The dog barked.   Where are you going?

Sentences with auxiliaries and semi-auxiliaries
This may have solved the problem.   He is going to take the bus.

Simple elliptical sentences
The dog over there.   He did.

Level 1 Infinitive complement with same subject as main clause
Try to brush her hair.

Level 2 Conjoined noun phrases in subject position
John and Mary left early.

Sentences conjoined with a coordinating conjunction
I brought candy and Peter cleaned up.

Conjoined verbal, adjectival, or adverbial constructions
He sang and jumped on the way home.

Level 3 Relative clause modifying object of main verb
The man scolded the boy who stole the bicycle.

Nominalization in object position
Why can't you understand his rejection of the offer?

Finite clause as object of main verb
John knew that Mary was angry.
Remember where it is?

Subject extraposition
It was surprising for John to have left Mary.

Raising
John seems to Mary to be happy.

Level 4 *-ing* form in complement position
He loves visiting his grandfather.
I feel like turning it.

Complements other than object NP or finite clause
Remember where to go?
I want it done today.
I consider John a friend.
I want these animals out of my house.

Comparative with object of comparison
John is older than Mary.

Level 5 Sentences joined by a subordinating conjunction
They will play today if it does not rain.

Nonfinite clauses in adjunct (not complement) positions
Cookie Monster touches Grover after jumping over the fence.
Having used both, I prefer the second method.

Level 6 Relative clause modifying subject of main verb
The man who cleans the rooms left early today.

Embedded clause serving as subject of main verb
For John to have left Mary was surprising.

Nominalization serving as subject of main verb
John's refusal of the drink angered Mary.

Level 7 More than one kind of embedding in a single sentence
John decided to leave Mary when he heard that she was seeing Mark.
Who did you say that you saw when you were at the party?