LSci 51/CogS 56L: Acquisition of Language

Lecture 17

Syntactic acquisition IV

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say he fell?

—> When did the boy say __ he fell?

—> When did the boy say he fell __?

Two interpretations possible

When did the saying happen?

When did the falling happen?

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say he fell?

—> When did the boy say __ he fell?

—> When did the boy say he fell __?

Two interpretations possible

When did the saying happen?

When did the falling happen?

Children allow both these structures (and their interpretations), too.

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say how he fell?

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say how he fell?

—> When did the boy say __ [how he fell]?

When did the boy say [how he fell __]?

Only one interpretation

When did the saying happen?

When did the falling happen?

Knowledge of *wh*-questions

De Villiers 1995: comprehension task with 3- to 6-year-olds

> "Once there was a boy who loved climbing trees in the forest. One afternoon he slipped and fell to the ground. He picked himself up and went home. That night when he had a bath, he saw a big bruise on his arm. He said to his Dad, 'I must have hurt myself when I fell this afternoon.'"

When did the boy say how he fell?	Only one interpretation
—> When did the boy say __ [how he fell]?	When did the saying happen?
When did the boy say [how he fell __]?	*When did the falling happen?*

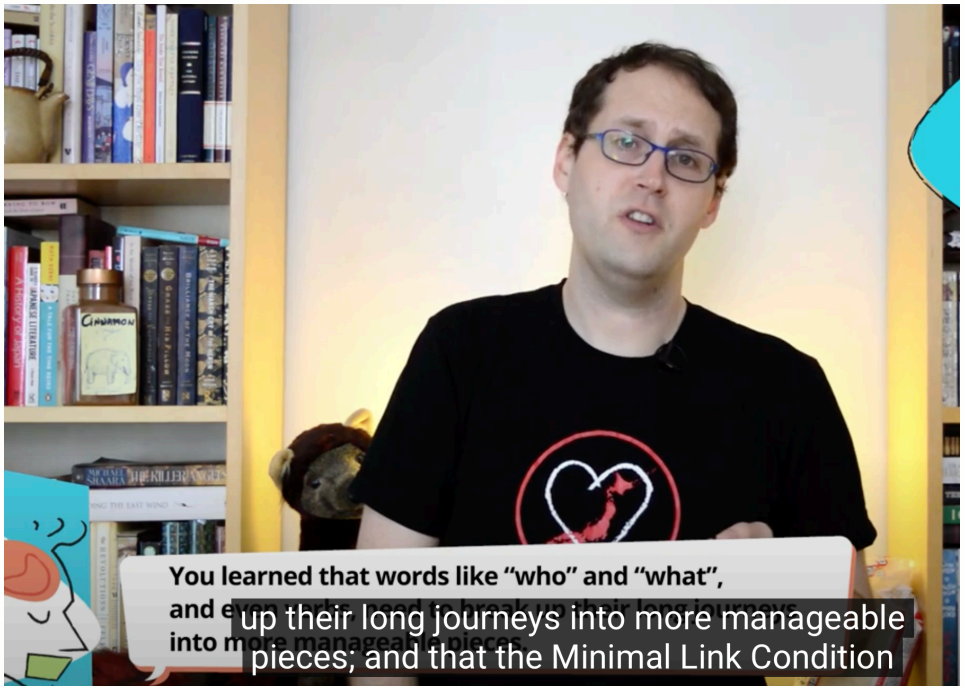
Children allow only the top structure (and its interpretation), too.

Knowledge of *wh*-questions

This knowledge of which *wh*-dependencies are allowed vs. not allowed is something children must learn for their language. It's sometimes referred to as knowing about "syntactic islands".

https://www.youtube.com/watch?v=01uH4XfJx3g

0:38-1:30: Syntactic islands intro



[Extra]

Syntactic islands

involve wh-dependencies.

This kitty was bought as a present for someone.

Lily thinks this kitty is pretty.

What's going on here?

Who does Lily think the kitty for is pretty?

What does Lily think is pretty, and who does she think it's for?

Syntactic islands

involve wh-dependencies.

What's going on here?

There's a dependency between the *wh*-word who and where it's understood (the gap)

Who does Lily think the kitty for__who is pretty?

Syntactic islands

involve wh-dependencies.

What's going on here?

There's a dependency between the *wh*-word who and where it's understood (the gap)

Who does Lily think the kitty for__who is pretty?

This dependency is strongly dispreferred in English.

Syntactic islands

involve wh-dependencies.

What's going on here?

There's a dependency between the *wh*-word who and where it's understood (the gap)

Who does Lily think the kitty for__who is pretty?

This dependency is strongly dispreferred in English.

One explanation: The dependency crosses a "syntactic island" (Ross 1967)

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for__who is pretty? Subject island

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

Jack is somewhat tricksy.

He claimed he bought something.

What did Jack make the claim that he bought __what?

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

Jack is somewhat tricksy.

He claimed he bought something.

Elizabeth wondered if he actually did and if so, what it was.

What did Elizabeth wonder whether Jack bought __what?

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

Jack is somewhat tricksy.

He claimed he bought something.

Elizabeth worried it was something dangerous.

What did Elizabeth worry if Jack bought __what?

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

Important: It's not about the length of the dependency.

(Chomsky 1965, Ross 1967)

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

Important: It's not about the length of the dependency.
(Chomsky 1965, Ross 1967)

What did Elizabeth think __what?

✔

Elizabeth

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

Jack

Elizabeth

Important: It's not about the length of the dependency.
(Chomsky 1965, Ross 1967)

What did Elizabeth think Jack said __what?

Syntactic islands

involve wh-dependencies.

Lily

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

Jack

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

Elizabeth

Important: It's not about the length of the dependency.
(Chomsky 1965, Ross 1967)

What did Elizabeth think Jack said Lily saw __what?

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

English adults judge these island-crossing dependencies to be far less acceptable than many others, including others that are very similar except that they don't cross syntactic islands (Sprouse et al. 2012).

Syntactic islands

involve wh-dependencies.

Ross 1967

Who does Lily think the kitty for __who is pretty? Subject island

What did Jack make the claim that he bought __what? Complex NP island

What did Elizabeth wonder whether Jack bought __what? Whether island

What did Elizabeth worry if Jack bought __what? Adjunct island

English-learning children strongly disprefer one of these island-crossing dependencies compared to others (de Villiers et al. 2008).

Child judgments

Syntactic islands

involve wh-dependencies.

Child knowledge as measured by preferred interpretation behavior

De Villiers et al. 2008:
How do children prefer to interpret potentially ambiguous *wh*-questions?

Child judgments

Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

context

De Villiers et al. 2008

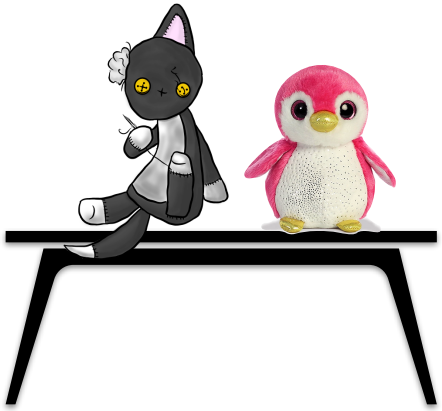
Child judgments

Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

context



De Villiers et al. 2008

Child judgments

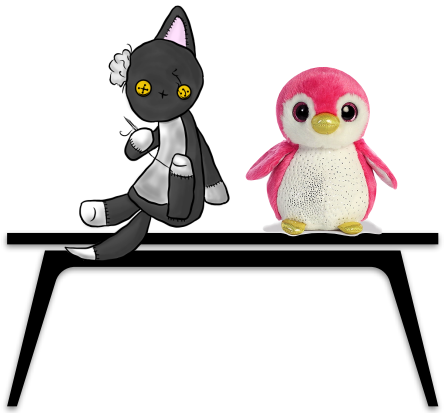
Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy fix the cat that was lying on the table with ___*what*?

context



De Villiers et al. 2008

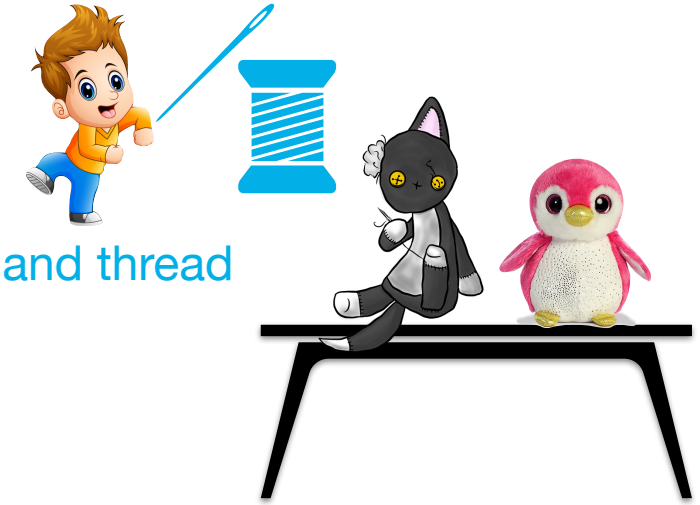
Child judgments

Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy [fix the cat that was lying on the table [with ___*what*]]?



a needle and thread

De Villiers et al. 2008

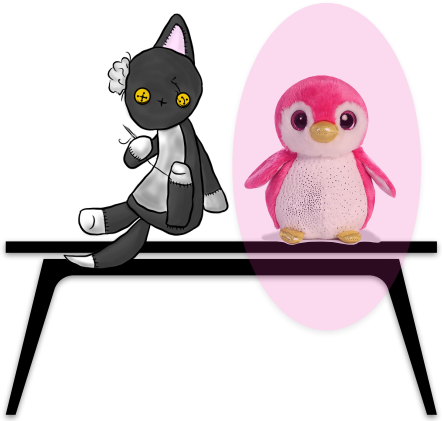
Child judgments

Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy [fix [the cat [that [was [lying [on [the table [with ___*what*]]]]]]]]?



a penguin

De Villiers et al. 2008

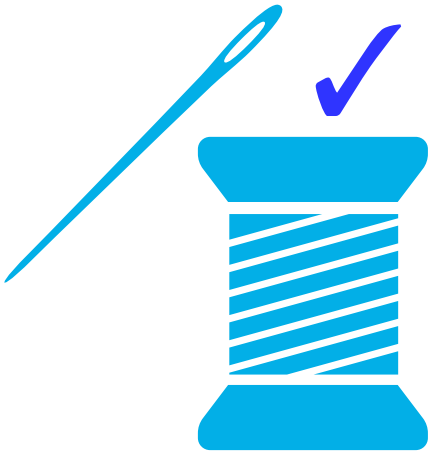
Child judgments

Syntactic islands

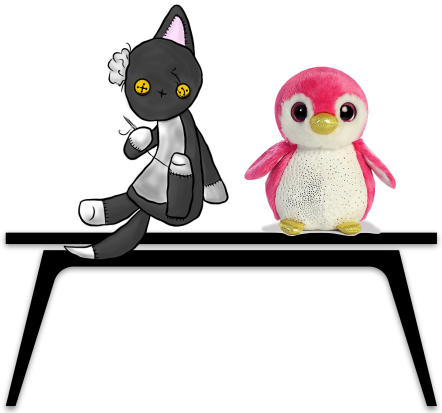
involve wh-dependencies.

Child preferred interpretation behavior

What did the boy fix the cat that was lying on the table with ___*what*?



children strongly prefer this interpretation



De Villiers et al. 2008

Child judgments

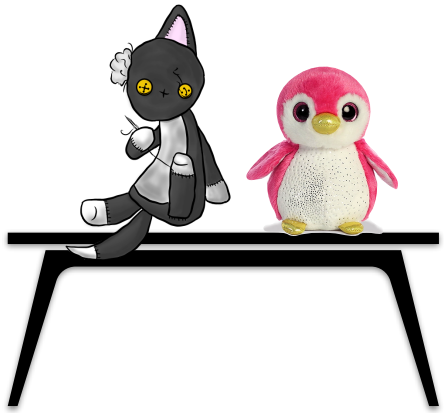
Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy [fix [the cat [that [was [lying [on [the table [with ___*what*]]]]]]]]?

…and strongly disprefer this interpretation



De Villiers et al. 2008

Child judgments

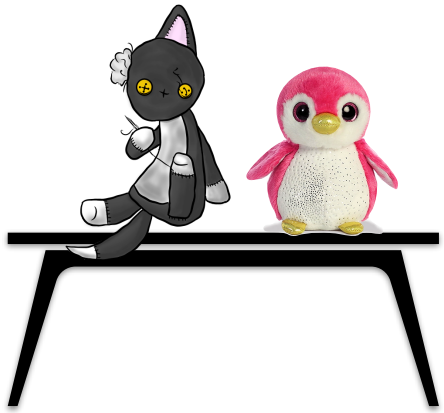
Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy [fix [the cat [that [was [lying [on [the table [with ___*what*]]]]]]]]?

This means they strongly disprefer the *wh*-dependency this interpretation relies on.



De Villiers et al. 2008

Child judgments

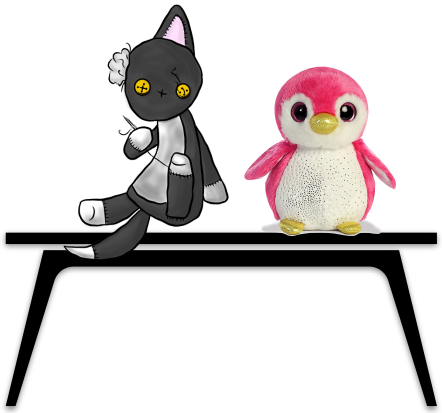
Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

What did the boy [fix [the cat [that [was [lying [on [the table [with ___*what*]]]]]]]]?

…which is a dependency that crosses a Complex NP.



De Villiers et al. 2008

Child judgments

Syntactic islands

involve wh-dependencies.

Child preferred interpretation behavior

+ other *wh*-dependencies

Who did the little sister ask how to see __?

Who did the boy ask what to bring __?

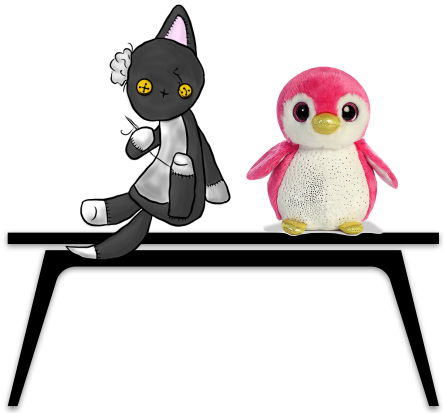
How did the mom learn what to bake __?

How did the girl ask where to ride __?

How did the boy who sneezed drink the milk ___?

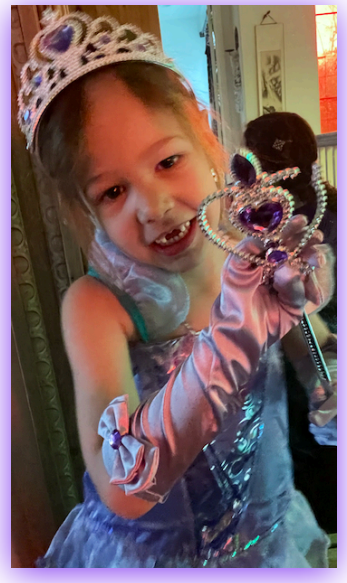
What did the mother say she bought __?

Who did the policewoman help to call __?



De Villiers et al. 2008

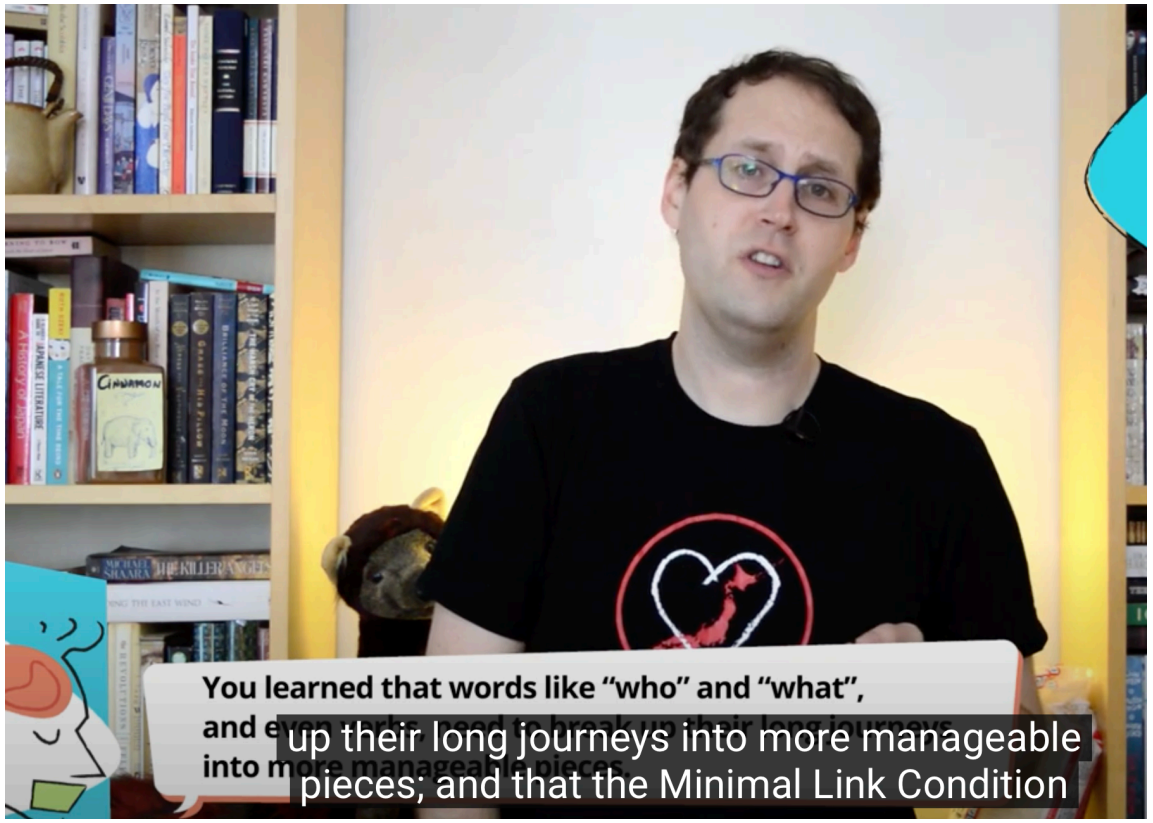
But how could a child learn this?



Syntactic islands [Extra]

https://www.youtube.com/watch?v=01uH4XfJx3g

6:55-7:15: Breaking structure into pieces



Syntactic islands

one learning theory

Pearl & Sprouse 2013
Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

Learn the right building blocks

Syntactic islands

Learn the right building blocks

View *wh*-dependencies in terms of their building blocks and track (count) those building blocks in the input.

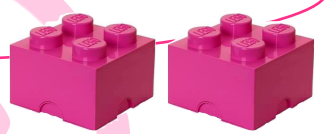
Pearl & Sprouse 2013
Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

Syntactic islands

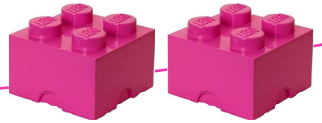
Learn the right building blocks

(Much) less acceptable dependencies have low probability segments

[CP Who did [Lily [think [that [[the kitty [for ___who]] was pretty ?]]]]



What did the boy [fix [the cat [that [was [lying [on [the table [with ___what]]]]]]]]?



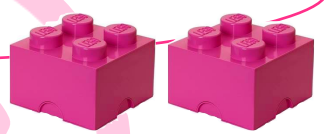
Pearl & Sprouse 2013
Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

Syntactic islands

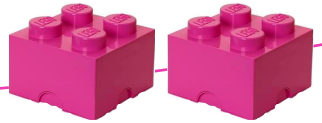
Learn the right building blocks

So if children break these dependencies into smaller building blocks, they can identify if a dependency has bad segments (made up of one or more low probability building blocks).

[CP Who did [Lily [think [that [[the kitty [for ___who]] was pretty ?]]]]



What did the boy [fix [the cat [that [was [lying [on [the table [with ___what]]]]]]]]?

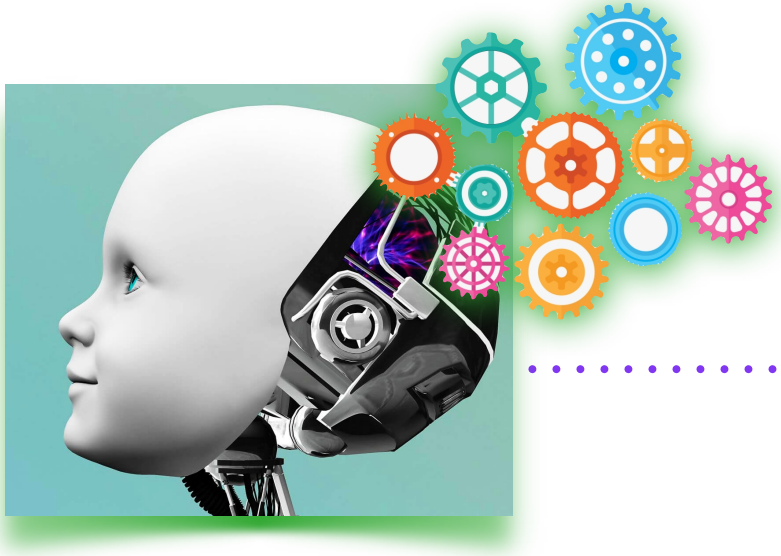


Pearl & Sprouse 2013
Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

Syntactic islands

Learn the right building blocks

Dickson & colleagues (Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025) used computational cognitive modeling to investigate this kind of acquisition theory for syntactic islands.

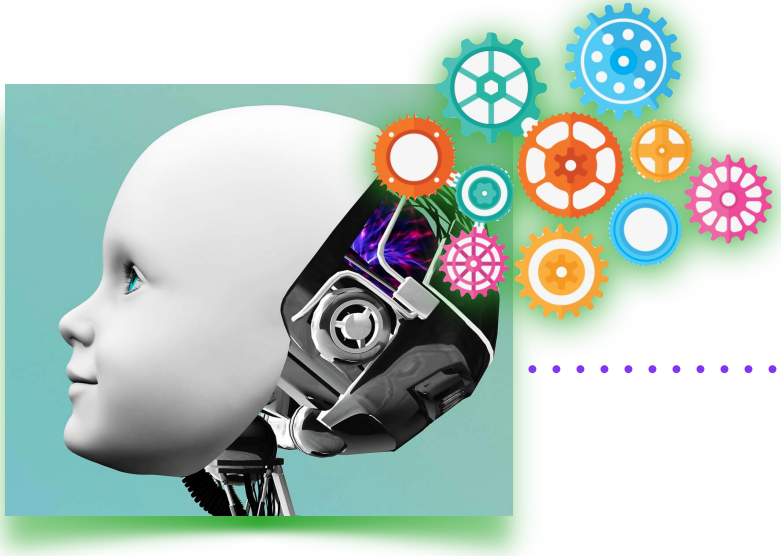


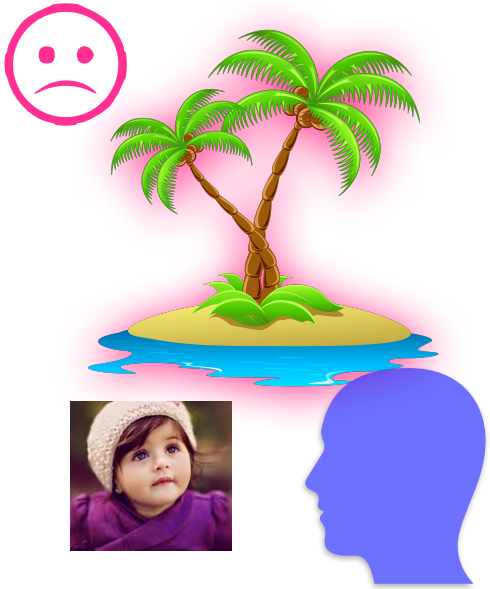
Syntactic islands

Learn the right building blocks

Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

They investigated a modeled child who looked for "efficient building blocks" that made the child's input very predictable.



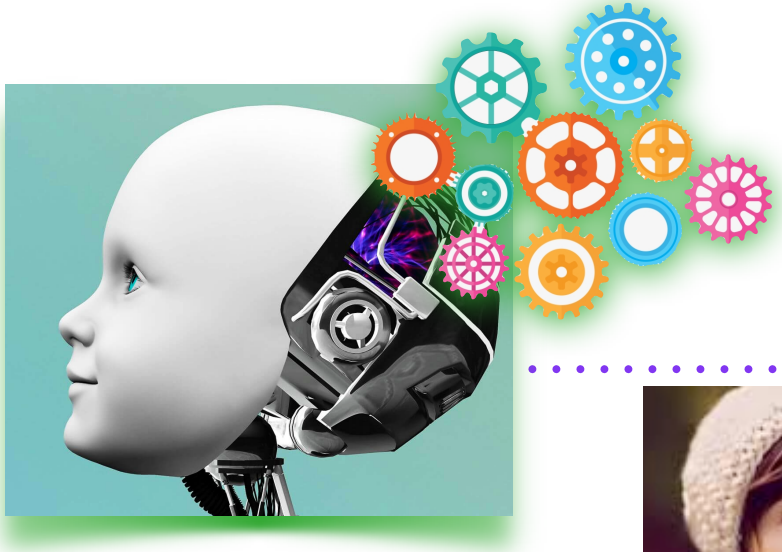


Syntactic islands

Learn the right building blocks

Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

This “efficient building blocks” learner was able to generate almost all of children’s observed behavior.

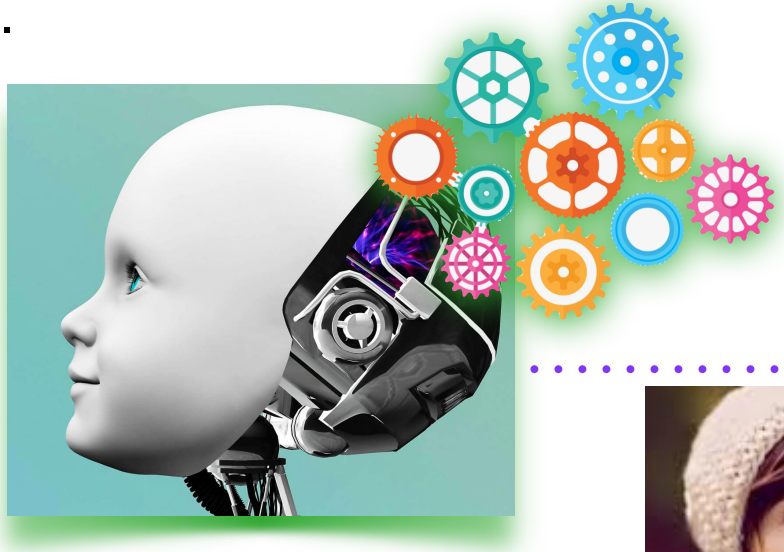


Syntactic islands

Learn the right building blocks

Dickson, Pearl, & Futrell 2022, 2024, Dickson 2025

Implication: This learning theory (implemented by the modeled child) is pretty good at capturing children's behavior. So, it may be a pretty good explanation for how children acquire syntactic island knowledge from their input.



Recap: Syntactic islands

Constraints on which *wh*-dependencies are allowed in a language (sometimes called knowledge of the language's "syntactic islands") are one type of sophisticated syntactic knowledge children seem to learn fairly young.

One way children might do that is to look for efficient building blocks of these *wh*-dependencies that make the input more predictable.

Quantifiers

Quantifiers

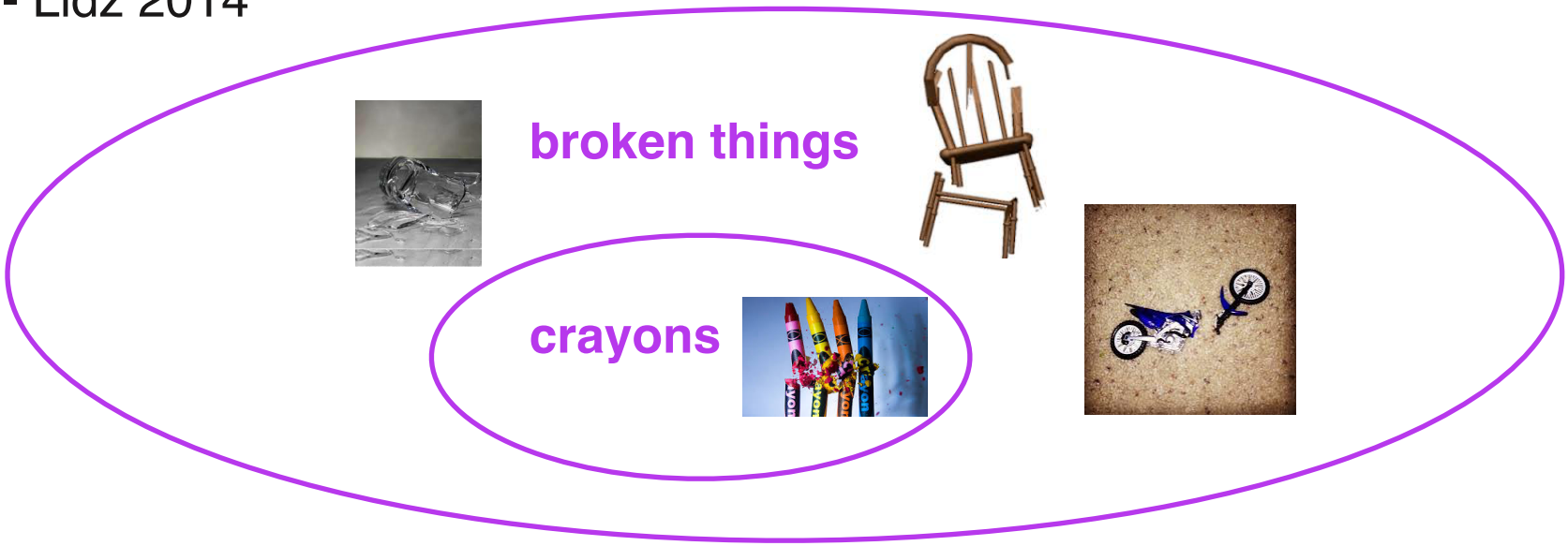
Quantifiers are words that express quantities, like *a, some, every, none,* and *most.*

"We have words whose meanings make reference to specific quantities (*1, 2, 3*,...), to approximate quantities (*a few, several*), to existence (*some, any*), to universals (*every, all*), and to comparisons among quantities (*more, most*). " - Lidz 2014

Quantifiers

Quantifiers are words that express quantities, like *a*, *some*, *every*, *none*, and *most*.

"Quantifiers like *every*, *some*, or *most*, also require representing a relation between two sets. For example, when we say "every crayon is broken," we are expressing a relation between the set of crayons and the set of broken things such that the former is a subset of the latter…" - Lidz 2014

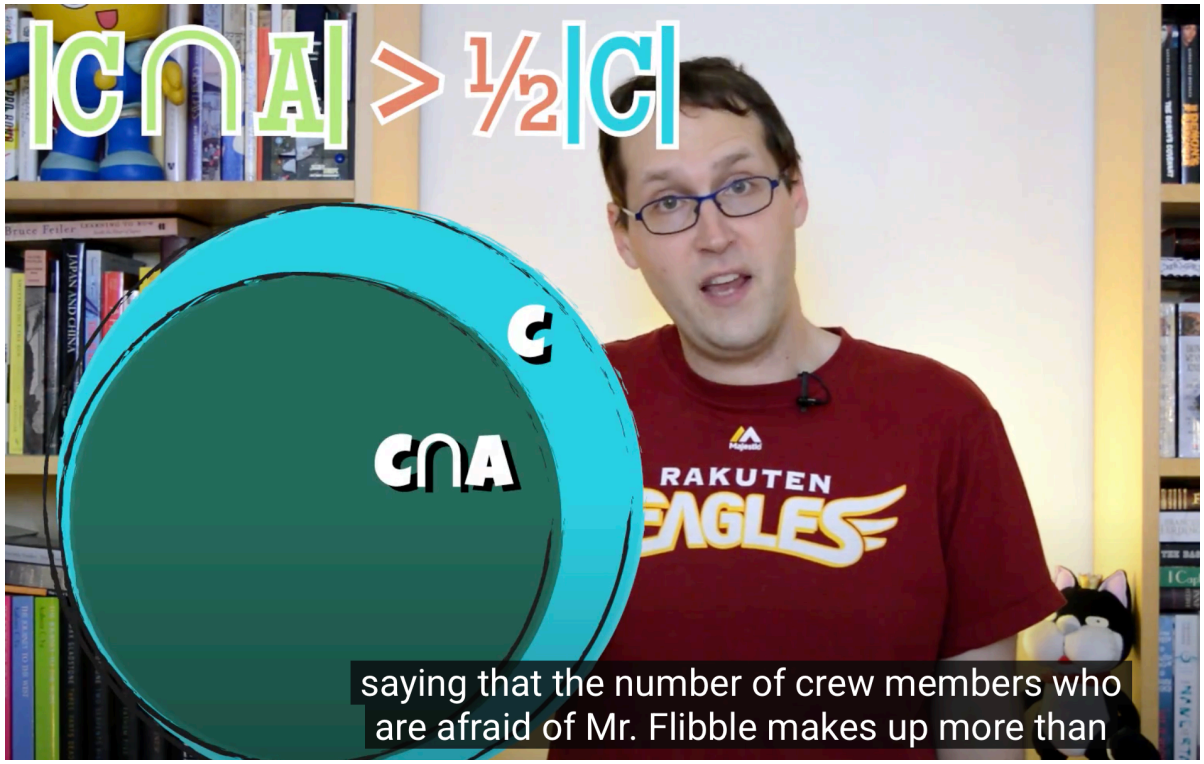


[Extra]

Quantifiers & Sets

https://www.youtube.com/watch?v=U1l3C_hmjqM

3:46 - 3:59: sets with “most”



Quantifiers

Quantifiers are words that express quantities, like *a*, *some*, *every*, *none*, and *most*.

"The first problem is simply one of abstraction…they are not tied to concrete referents and can be applied to any noun, with only a few constraints…In addition, their meanings are highly contextually defined. Even a single phrase like *every girl* will pick out a different set of girls and a different number of girls depending on whether the context of discourse is the people in my class or the people in my family." - Wagner 2010

Quantifiers: Cross-linguistic development

https://www.sciencedaily.com/releases/2016/09/160913124720.htm

Testing children in 31 languages grouped into 11 language families.

"…children identified the quantifiers all or none more easily than some or most. This suggests that children acquire quantifiers in the same order basing themselves on factors relating to the meaning and use of each quantifier."

Katsos & 50+ others 2016

Napoleon Katsos, Chris Cummins, Maria-José Ezeizabarrena, Anna Gavarró, Jelena Kuvač Kraljević, Gordana Hrzica, Kleanthes K. Grohmann, Athina Skordi, Kristine Jensen de López, Lone Sundahl, Angeliek van Hout, Bart Hollebrandse, Jessica Overweg, Myrthe Faber, Margreet van Koert, Nafsika Smith, Maigi Vija, Sirli Zupping, Sari Kunnari, Tiffany Morisseau, Manana Rusieshvili, Kazuko Yatsushiro, Anja Fengler, Spyridoula Varlokosta, Katerina Konstantzou, Shira Farby, Maria Teresa Guasti, Mirta Vernice, Reiko Okabe, Miwa Isobe, Peter Crosthwaite, Yoonjee Hong, Ingrida Balčiūnienė, Yanti Marina Ahmad Nizar, Helen Grech, Daniela Gatt, Win Nee Cheong, Arve Asbjørnsen, Janne von Koss Torkildsen, Ewa Haman, Aneta Miękisz, Natalia Gagarina, Julia Puzanova, Darinka Anđelković, Maja Savić, Smiljana Jošić, Daniela Slančová, Svetlana Kapalková, Tania Barberán, Duygu Özge, Saima Hassan, Cecilia Yuet Hung Chan, Tomoya Okubo, Heather van der Lely, Uli Sauerland, Ira Noveck. **Cross-linguistic patterns in the acquisition of quantifiers**. *Proceedings of the National Academy of Sciences*, 2016; 113 (33): 9244 DOI: 10.1073/pnas.1601341113

Quantifiers: Cross-linguistic development

https://www.sciencedaily.com/releases/2016/09/160913124720.htm

Testing children in 31 languages grouped into 11 language families.

In fact, an adult-like understanding of *most* comes in quite late — around 6 (Sullivan, Bale, & Barner 2018).

"Could you put most of the oranges on the plate?"

???

Quantifiers

"A final, and perhaps more difficult problem posed by quantifiers is the fact that their interpretation also depends on the **scope** they take in a sentence. Scope itself is often ambiguous and does not depend on the linear order of elements in a sentence." – Wagner 2010

Quantifiers & Scope

http://www.thelingspace.com/episode-8
https://www.youtube.com/watch?v=XC-MGuj75zQ
0:39 - 5:24

Quantifiers & Scope

"Every kitty didn't sit on the stairs"

✗ No kitties sat on the stairs.

✓ Not all kitties sat on the stairs.

Why are two interpretations available?

Quantifier scope

When two (or more) quantifiers are in a sentence, they interact semantically to determine the sentence's meaning, based on the scope of each quantifier.

Quantifiers & Scope

Quantifier scope

“ **Every** kitty did**n’t** sit on the stairs”

∀ ¬

✗ No kitties sat on the stairs.

✓ Not all kitties sat on the stairs.

Quantifiers & Scope

Quantifier scope

“ **Every** kitty did**n’t** sit on the stairs”

∀ ¬

surface ∀ kitties ***k*** ¬ ***k*** sat on the stairs

“For all kitties k, it’s not true that k sat on the stairs”

No kitties sat on the stairs.

Not all kitties sat on the stairs.

✓

Quantifiers & Scope

Quantifier scope

" **Every** kitty did**n't** sit on the stairs"

∀ ¬

surface ∀ kitties ***k*** ¬ ***k*** sat on the stairs

"For all kitties k, it's not true that k sat on the stairs"

No kitties sat on the stairs.

Not all kitties sat on the stairs.

Quantifiers & Scope

Quantifier scope

“ **Every** kitty did**n’t** sit on the stairs”

∀ ¬

inverse ¬ ∀ kitties ***k***, ***k*** sat on the stairs

“It’s not true that for all kitties k, k sat on the stairs”

Not all kitties sat on the stairs.

✓

Quantifiers

Another quantifier scope example

Everyone saw **a** movie last night.

$\forall$ $\exists$

✔

surface $\forall$ people ***p*** $\exists$ a movie **m** that **p** saw.

"For all people p, p saw a movie m."

Quantifiers

Another quantifier scope example

Everyone saw **a** movie last night.

∀ ∃



✔

(It's okay if it's the same movie. All that matters is that everyone did see a movie.)

surface ∀ people ***p*** ∃ a movie **m** that **p** saw.

"For all people p, p saw a movie m."

Quantifiers

Another quantifier scope example

Everyone saw **a** movie last night.

$\forall$ $\exists$



✔

inverse $\exists$ a movie **m** that $\forall$ people ***p***, ***p*** *saw* ***m***.

*"There's a movie **m** that all people **p** saw."*

Quantifiers

Another quantifier scope example

Everyone saw **a** movie last night.

∀ ∃

≠

(It has to be the same movie.)

inverse ∃ a movie **m** that ∀ people ***p***, ***p*** *saw* ***m***.

*"There's a movie **m** that all people **p** saw."*

Quantifiers & Scope

Children's preferences for scope (Lidz & Musolino 2002, Lidz 2018)

Children find it easier to interpret scope relations that match the linear order (isomorphic, surface). Adults can more easily get the interpretation that does not match the linear surface order (non-isomorphic, inverse).

Everyone saw **a** movie last night.

$\forall \quad \exists$

Children prefer this interpretation (isomorphic):

scope: every >> a ("every has scope over a")

For every person p, that person saw a movie m.

$\forall \qquad\qquad\qquad \exists$

Quantifiers & Scope

Children's preferences for scope (Lidz & Musolino 2002)

Children find it easier to interpret scope relations that match the linear order (isomorphic, surface). Adults can more easily get the interpretation that does not match the linear surface order (non-isomorphic, inverse).

Everyone saw **a** movie last night.

$\forall \quad \exists$

As opposed to this one (non-isomorphic):

scope: a >> every ("a has scope over every")

For a movie m, every person saw m.

$\exists \quad \forall$

Quantifiers & Scope

Children's preferences can be changed (Viau, Lidz, & Musolino 2010)
If children are primed with the inverse interpretation, they can more easily access the inverse interpretation in other sentences.



∀ ∃
Everyone saw a movie last night.

Primed with context that supports this one (inverse):
scope: a >> every ("a has scope over every")
For a movie m, every person saw m.

∃ ∀

Quantifiers & Scope

Children's preferences can be changed (Viau, Lidz, & Musolino 2010)
If children are primed with the inverse interpretation, they can more easily access the inverse interpretation in other sentences.

∀ ∃
Everyone saw a movie last night.

Primed with a >> every

∃ ∀

∀ ¬
Every horse didn't jump over the fence.

More likely to get this one (inverse):
scope: n't >> every ("n't has scope over every")

¬ ∀

It is not the case that every horse jumped over the fence.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

What's really going on with kids and the inverse scope?

5-year-olds

One idea: **grammatical processing** problem

The **inverse scope** is harder to get from the surface string.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

What's really going on with kids and the inverse scope?

5-year-olds

grammatical processing

Another idea: **pragmatic context** management problem.

Children thought the topic of conversation (the implicit **Q**uestion **U**nder **D**iscussion) was something else and this utterance doesn't answer that QUD very well.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

Did none of the kitties sit on the stairs?

Do kitties like stairs? **QUD** *How many kitties sat on the stairs?*

5-year-olds

grammatical processing

Another idea: **pragmatic context** management problem.

Children thought the topic of conversation (the implicit **Q**uestion **U**nder **D**iscussion) was something else and this utterance doesn't answer that QUD very well.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

Kitties don't like stairs

expectations about the world

Kitties love stairs.

Kitties don't care about stairs.

5-year-olds

grammatical processing

Another idea: **pragmatic context** management problem.
QUD

Children's prior **expectations about the world** make this utterance less informative.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

QUD

grammatical processing

expectations about the world

5-year-olds

It's hard to manipulate only one of these factors in experimental research investigating children's responses.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

QUD

grammatical processing

expectations about the world

5-year-olds

Using a computational cognitive model that formalizes the separate contribution of each factor, Savinelli, Scontras, & Pearl (2017) determined which ones have the largest impact on children's observed behavior.

Quantifiers & Scope

Quantifier scope

✗ "**Every** kitty did**n't** sit on the stairs"

∀ ¬ **Every** kitty did**n't**

??

inverse ¬ ∀ Not all kitties sat on the stairs.

QUD

grammatical processing

expectations about the world

5-year-olds

The pragmatic factors seem to be the driving force behind children's behavior. This suggests that 5-year-olds are still developing their ability to manage the pragmatic context of a conversation as well as adults do. However, they know that the inverse scope interpretation is possible and can access it.

Recap: Quantifiers

Quantifiers are also more sophisticated since they can interact with each other to form the interpretation of a sentence. In many cases, the meaning of the sentence is ambiguous since more than one interpretation is possible.

Children have preferences for how to interpret scopally-ambiguous utterances — they prefer the surface interpretation over the inverse interpretation.

Children's surface-scope preference may be because pragmatic factors disfavor the inverse interpretation. In particular, the inverse interpretation isn't as informative as the surface interpretation would be.

Questions?

You should be able to do all the review questions for syntactic acquisition, and all the questions for HW5.