







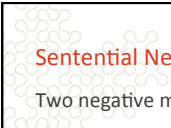

## The Development of Negative Sentences in English

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## Acquisition Class Schedule

1. **Monday: Rozz**  
The Development of Negative Sentences in English
2. **Tuesday: Stephen**  
Acquisition of Scope Parameters
3. **Wednesday: Rozz**  
What's Basic? Double Negation or Negative Concord:  
A Truth Value Judgment Task
4. **Thursday: Stephen**  
Linguistic Tests for Scope: Implications for Acquisition

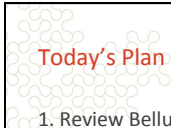




## Sentential Negation in English

Two negative markers: *not* and *n't*



This pen doesn't work (colloquial)  
This pen does not work  
cf. This pen works

Negation is tricky in English in the sense that it requires do-support and the placement of inflection differs from affirmative sentences

## Today's Plan

1. Review Bellugi's developmental stages
2. Harris & Wexler's (1996) proposal
3. Data Issues: Elicited production
4. Longitudinal EP study: Thornton & Tesan (2007, 2013)
5. Zeijstra's (2004, 2008) learnability proposal
6. EP study: Thornton & Rombough (2015)
7. Driving out Non-Target Forms






## Bellugi's (1967) Stages of Negation

**Stage 1:** Negation is primitive  
Placed at beginning or end of word or phrase ('nucleus')  
**No** (it) fit

**Stage 2:** Negation is positioned inside the sentence  
Minnie Mouse **not** fit  
Later....  
Minnie Mouse **don't/can't** fit

**Adult:** Productive use of negative auxiliary verbs  
Minnie Mouse **doesn't** fit

## Bellugi's Stage 1

**Stage 1:** Beginning or end of phrase  
**No** (it) fit  
Limited data available so hard to study

**Proposals:**  
Negation external to the sentence?  
vP internal subject in pro-drop grammar (Déprez & Pierce 1993)  
Our focus is Stage 2 and the transition to Stage 3

### Bellugi's Stage 2



**Stage 2:** Negation is positioned inside the sentence

Minnie Mouse **not** fit

Later....

Minnie Mouse **don't/can't** fit (fixed forms)

#### Questions:

If Bellugi is correct, children only have 'not' as their negative marker

'Don't' and 'Can't' are some kind of transitional negative markers

### Bellugi's Stage 3



Children are documented as having mastered the system of auxiliary verbs in English

1. use 'will' in various syntactic contexts
2. have mastered the paradigm for 'be'
3. can ask yes/no questions with do-support

### Harris & Wexler (1996)



Children's productions with 'not' are a direct reflection of the Optional Infinitive stage

Children project tense optionally, hence bare verbs

Minnie Mouse **not** fit

### H&W (1996) on 'Do'



It's not the case that children haven't acquired the auxiliary verb *do*

*Do* is expected to alternate with bare forms

*Do* is linked to use of tense

- |                                    |           |
|------------------------------------|-----------|
| a. Minnie Mouse not fit            | (- tense) |
| b. Minnie Mouse <b>don't</b> fit   | (+ tense) |
| c. Minnie Mouse <b>doesn't</b> fit | (+ tense) |

### H&W (1996): Child data



Predictions tested using transcripts from 10 children in the CHILDES database (1;6 to 4;1)

Finding: 56% of children's productions used *do*, but almost all were *don't* not *doesn't*

- |                                    |           |
|------------------------------------|-----------|
| a. Minnie Mouse not fit            | (- tense) |
| b. Minnie Mouse <b>don't</b> fit   | (+ tense) |
| c. Minnie Mouse <b>doesn't</b> fit | (+ tense) |

What if *don't* isn't a true auxiliary verb?  
Then, little data showing the alternation

### H & W (1996): Prediction



Assuming that *not* is a head, H&W predict children will not use *not* with an inflected main verb

- |                                  |           |
|----------------------------------|-----------|
| a. Minnie Mouse not fit          | (- tense) |
| b. *Minnie Mouse <b>not fits</b> | (+ tense) |

## H & W (1996): Neg + Inflected Verb



The transcripts from the 10 children revealed 52 examples with sentence internal negation

There were 5/52 in which the main verb was inflected (e.g. *It not fits*); these are analysed as performance errors

3 <sup>rd</sup> Person Subjects + Main Verb	Affirmative	Negative
-tense	43% (782)	90% (47)
+tense	57% (594)	10% (5)

Performance errors

## Limited Data



Only 52 productions with *not* or *no* plus main verb

English: Can only look at productions with 3<sup>rd</sup> person subjects so we can see the 's' on the main verb

Spontaneous production is a conservative measure of children's grammatical competence

Children may avoid the hard stuff...

## Elicited Production



The goal of elicited production experiments is to probe a child's current grammatical hypotheses

If children are uncertain about the target structure but they 'give it their best shot', you may get a different picture of their grammar

There is often a mismatch between children's spontaneous production and findings from elicited production experiments

This is the case for negation

## Eliciting Negation



Negation is felicitous when the corresponding affirmative statement is under consideration...

Our elicitation technique presented situations in which we first elicited positive statements, and in later situations, the statement was false

Scenarios all tested properties of items; whether they open, testing dog toys to see if they squeak, whether cars drive (some minus wheels), whether characters fit through the door of a toy bus etc.

## Technique: Testing Boxes



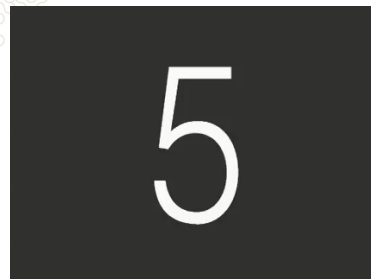
"See if this box opens. How about this one? OK, and this one?"

If child doesn't produce a negative sentence, continue:

"So this one opens, and this one opens. What about this one?"

Target: *It doesn't open*

## Eliciting Negation



## Longitudinal Study



Thornton & Tesaar 2007, 2013

4 children studied for about 1 year; sessions every 2 weeks  
(ranging in age from 1;9 to 2;1 at beginning of study  
to 2;8 to 3;8 at end)

Studied negative sentences with 3<sup>rd</sup> person subjects and a lexical  
main verb

Different children take different paths to the adult grammar

## Developing Sentential Negation



Early files show:

It not fit

It don't fit

#It doesn't fit (only towards end of development)

This questions Harris & Wexler's claim that bare forms  
and ones with *do* alternate in the Optional Infinitive stage

If *don't* is an unanalysed form then there is no productive  
do-support at the early stages

## T&T: Non-target negation



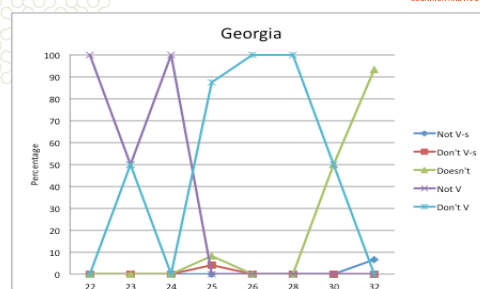
The longitudinal data revealed productions with a 3SGS  
morpheme, but not correctly positioned

It not fits (low)

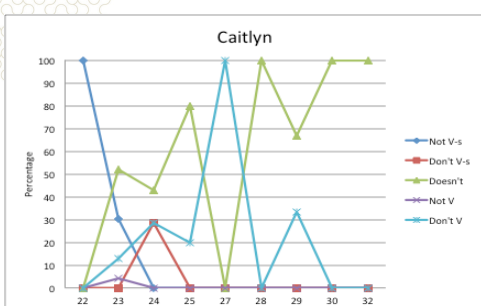
It don't fits (low)

It's not/don't V (high) \*not shown in following graphs

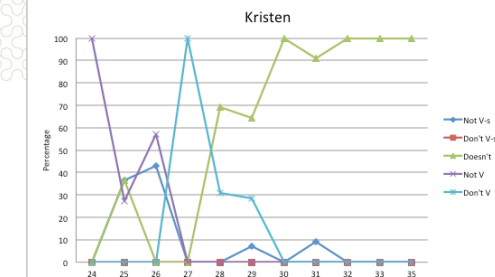
## Georgia: Conservative Learner



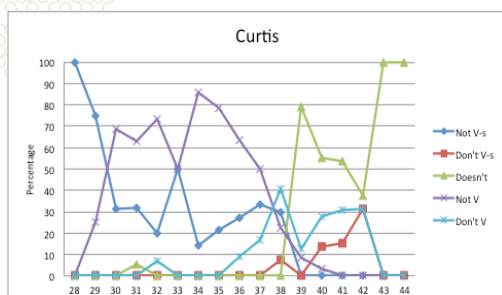
## Caitlyn: Adult-like at 2;6



## Kristen: Also adult-like at 2;6



### Curtis: Chaotic until 3;8



### The Status of 'Not'



The longitudinal study revealed many instances of negation with an inflected main verb

It not fits

It don't fits

Too many to be performance errors

Such errors shouldn't emerge in robust numbers if 'not' is a head, as Harris & Wexler assumed

### Zeijstra's (2004, 2008) Proposal



Learners of languages should only add functional projections to the required inventory for their language if there is linguistic evidence for them

Child's Initial Hypothesis: Negation is an Adverb

Adjoin to the vP

No NegP needed

If there is linguistic evidence that your language requires a negative head, then switch to (or add) this option

### Z's Negative Concord Parameter



These cross-linguistic options are formulated as the 'Negative Concord Parameter'

Why?: The evidence required to add negation as a head is negative concord

Negative concord has to be licensed in the syntax (through Agree), and a NegP is required for this

What about kids learning Standard English?

### Evidence for NegP in English



Children acquiring Standard English must find some other form of evidence that tells them English has a head form of negation, *n't*

Negative auxiliary verbs are the obvious source of data that is frequent

*isn't, hasn't, mightn't doesn't* etc.

### Problem: Decomposition



Children appear to have some difficulty decomposing negative auxiliary verbs into their contributing morphemes

Bellugi proposed *don't* and *can't* are initially unanalysed wholes  
Data such as *It don't fits* support this

Thornton & Tesan (2013) propose that *doesn't* is the most informative form

The 's' is inside the word, so this may help children realize that *n't* is also a piece of the word (*do*+*s*+*n't*)

## Recap



Children initially only have a negative adverb: *not*

Children need to add NegP to their grammar so they can produce 'true' negative auxiliary verbs

Must decompose *doesn't* to figure out *n't* is a head form of negation

Productive use of negative auxiliary verbs follows

## Dealing with the Evidence



Once children acquire *doesn't*, what happens to the non-target productions?

Do the productions with *not* continue to exist alongside the adult-like productions?

The longitudinal data suggest the non-target forms disappear...

Check in more kids...

## Thornton & Rombough (2015)



25 children between 2;05 and 3;04 (mean 2;11)

Age range: Optional Infinitive stage

Elicited negative sentences with a range of verbs in different scenarios  
(*open, fit, stick, clap, squeak, drive, work, fly, moo*)

Full sentence utterances: 585

## Group of 25: Attempts at *Doesn't*



Attempts at 'Doesn't'	Raw Number	Percent	
Adult Negation with <i>doesn't</i>	232	52%	52%
<b>BARE</b>			
Negation with non-agreeing <i>don't</i>	39	9%	
Bellugi Stage 1 ( <i>No it fit</i> )	8	2%	
Negation with bare verb ( <i>It not fit</i> )	46	10%	21%
<b>NON-TARGET 3SGS INFLECTION</b>			
'High' inflection ( <i>It's not fit</i> )	19	4%	26.5%
'Low' inflection			
<i>It not fits</i>	50	11%	
<i>It don't fits</i>	22	5%	
<i>No it fits</i>	8	2%	
<i>It didn't fits</i>	2	.5%	26.5%
<b>Doubled Inflection</b>			
<i>It's not fits</i>	4	1%	
<i>It doesn't fits</i>	12	3%	
	442		

## Distribution of *Doesn't*



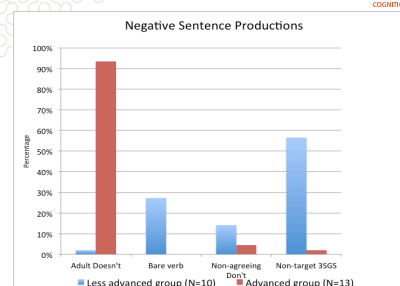
Children used *doesn't* in 52% of their productions

Are there children who are at an earlier stage of development don't use *doesn't*?

**Advanced Group:** 5 or more productions of *doesn't*

**Less Advanced Group:** Fewer than 5 productions of *doesn't*

## Thornton & Rombough (2015)



## Later Development



Once children add *do* and *n't*, their non-target productions with *not* disappear

This is true for lexical main verbs (our data)

We don't know if they might continue to use *not* with the verb *be*

(*He's not a student* vs. *He isn't a student*)

(These aren't non-target productions, though)

## To Explain



Why do the non-target productions disappear once children acquire *do* and *n't*?

What makes this happen?

And of course, why do the non-target negative sentences occur in the first place?

## Lohndal and Thornton (in progress)



The mapping between syntax and pronunciation is a challenge..

Thornton & Rombough (2015) experiment

Jade: Testing Boxes to see if they open

*It's not working, This one opens, This one's opens, It's not open, Not open, That's open (x2), That is open, This opens, It's not, This is open (x2).*

## Lohndal and Thornton



A proposal following Adger (2003):

In the syntax, children check off the tense features with the verb via Agree, and this forms a chain  
(T[tense], v[uInfl:tense])

The inflection features are on little *v*, for Adger

No problem here....

## Where to Pronounce?



Pronouncing Tense Rule (PTR)

In a chain (T[tense], v[uInfl:tense]), pronounce the tense features on *v* only if *v* is the head of T's sister (Adger 2003: 192)

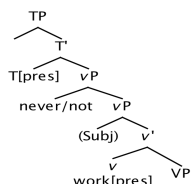
Presumably this is a rule that children have to master by figuring out the input and it takes a while

## Pronouncing Tense Rule (PTR)



If we assume that *not* is an adverb and adjoined to *vP*, then the rule allows the inflectional features to be pronounced on the verb (*This not works*)

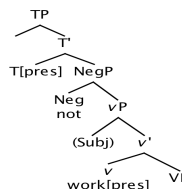
### Pronouncing Tense Rule (PTR)



*v* is the head of T's sister so OK to pronounce inflection on main verb

PTR: In a chain (T[tense], v[*u*Infl:tense]), pronounce the tense features on *v* only if *v* is the head of T's sister (Adger 2003: 192)

### Pronouncing Tense Rule (PTR)



If we assume, like Adger, that *not* is a head, then it disrupts the PTR.

In this representation, it's not the case that *v* is the head of T's sister

So, the PTR doesn't apply, and *do*-support is triggered

But this is adults....

### Wrong End of the Chain



Pronouncing Tense Rule

In a chain (T[tense], v[*u*Infl:tense]), pronounce the tense features on *v* only if *v* is the head of T's sister (Adger 2003: 192)

We know that kids also allow the inflection to be pronounced on T (wrong end of the chain), so kids clearly haven't mastered the PTR (*It's not work*)

And sometimes they allow doubling, so this PTR is tricky for them (*It's not works*)

**Proposal:** The 's' matches in phi-features with the subject NP, so maybe they think it is a legitimate host

### What's the Best Host?



How do we get ride of *It's not fit* with 'high' inflection?

Children have to analyse the input and acquire *do*

They have to realize it's a better host for the 'high' inflection (not sure how yet...)

### Reanalysis of Not



How do we get ride of *It not fits* with 'low' inflection?

Children have to analyse data such as sentences like *It does not fit* or possibly *It doesn't fit*

These data are out of sync with children's current grammar, which only allows *It not fits* or *It's not fit*

Let us suppose the data with *do*-support cause children to reanalyse *not* as a head, rather than as an adverb

### Driving out Non-Target Forms



If children reanalyse *not* as a head, rather than as an adverb, the PTR is disrupted, and will not allow children to pronounce the inflection on the main verb

Result:

Non-target negative sentences like *It not fits* and doubled *It's not fits* will no longer be produced

This is the desired result....



### Summary: A Long and Winding Road

1. Children initially only have the negative marker *not*, and it is analysed as an adverb (following Z's NC parameter). Lots of non-target negative sentences.

2. Children have to add the head form of negation *n't* to their grammars, by acquiring negative aux *doesn't*

3. At the same time as 2., children have to reanalyse *not* as a head. This enforces correct implementation of the PTR (except for high inflection...)

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