

## The Acquisition of the Russian *Or*<sup>\*</sup>, <sup>\*\*</sup>

### 1. Introduction

Cross-linguistically, languages fall into two categories in terms of what reading the disjunction operator gives rise to when clausemate negation is present.

English, German, etc.: when clausemate negation is present, the sentence containing the disjunction operator has a “neither” interpretation.

$$(1) \neg P \wedge \neg Q$$

In English, *or* corresponds to Boolean “inclusive” disjunction.

$$(2) \neg(P \vee Q) \Leftrightarrow \neg P \wedge \neg Q$$

(3) John didn't go to the movies or the concert

“Neither” reading: John didn't go to the movies and John didn't go to the concert.

Russian, Hungarian, etc.: when clausemate negation is present, the sentence containing the disjunction operator has an “I don't know which” interpretation.

(4) Ivan ne xodil v kino ili na koncert  
Ivan not go<sub>PAST</sub> in movies or on concert  
'Ivan did not go to the movies or did not go to the concert.'

“I don't know which” reading: Ivan didn't go to the movies or Ivan didn't go to the concert.

Szabolcsi (2002): *Ili*, the Russian ‘or’, has the Boolean “inclusive” semantics (evidence from embedded contexts where *ili* is interpreted inclusively). Disjunction operators in Hungarian,

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Russian and Italian have the status of PPIs; when the disjunction operator is used with clausemate negation, the disjunction operator takes wide scope and receives an “I don’t know which” interpretation. In English-type languages, disjunction is not a PPI and scopes below negation.

## 2. The PPI Parameter

Whether or not disjunction is a PPI in a given language is language-specific lexical information that children learn from the input. Disjunction is subject to a lexical parameter with values {+PPI, - PPI}.

¿What is the default setting of the PPI parameter?

(5) Mary doesn’t speak Russian or German.

“Neither” reading: Mary does not speak Russian and Mary does not speak German.

(6) Maša ne govorit po-ruski ili po-nemecki  
Masha not speak Russian or German  
‘Mary does not speak Russian or German.’

“I don’t know which” reading: Mary does not speak Russian or Mary does not speak German.

In every situation in which the “neither” reading of (5) is true, the “I don’t know which” reading of (6) will be true but not vice versa.

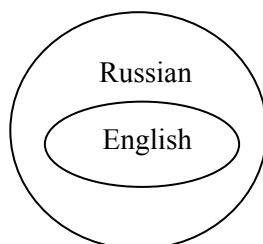


Figure 1.

The Subset Principle: the default setting of the PPI parameter must correspond to the smaller English grammar, hence must be “-PPI.”

BUT:

(7) Mary does not speak Russian or German.

Preferred “neither” reading: Mary does not speak Russian and Mary does not speak German.

(8) A: I know that Mary does not speak one of the languages that were in the job description.

Do you remember what language she doesn’t speak?

B: Mary does not speak Russian or German (I don’t remember which).

“I don’t know which” reading: Mary does not speak Russian or Mary does not speak German.

(9) Maša ne govorit po-russki ili po-nemecki  
Masha not speak Russian or German  
‘Mary does not speak Russian or German.’

“I don’t know which” reading: Mary does not speak Russian or Mary does not speak German.

While the English sentence in (7) has both the preferred “neither” reading and the less common “I don’t know which” reading, its Russian counterpart in (9) has only the “I don’t know which” reading.

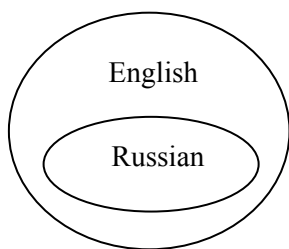


Figure 2.

The Russian and English grammars are NOT in a subset / superset relationship. Rather, there is a partial overlap between the two languages.

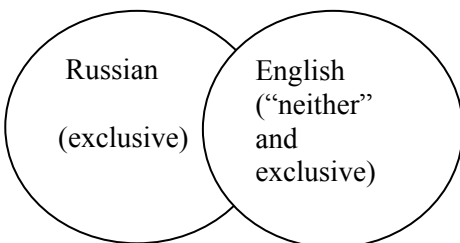


Figure 3.

Thus the Subset Principle does not enable us to determine what the default setting of the PPI parameter must be.

In view of the theory of LF, I would like to hypothesize that the default setting of the PPI parameter is “-PPI.” It is more economical to interpret the disjunction operator in its syntactic position. While the “-PPI” setting makes the isomorphic interpretation available, the “+PPI” setting makes the non-isomorphic interpretation available.

I hypothesize that the child should start out with the default “-PPI” setting.

### 3. The Experiment

#### 3.1 Acquisition Predictions

The default setting of the PPI parameter is “-PPI.”

A child acquiring Russian is liable to go through an “English” stage during which he will retain the default “-PPI” setting of the parameter before resetting it to the “+PPI” setting of the target language.

H<sub>1</sub>: Children acquiring Russian go through a stage where they interpret *ili* as “neither” in contexts where clausemate negation is present.

### 3.2 Experimental Design

The standard picture-matching task was used, where the child is shown two pictures, one that corresponds to the test sentence and one that does not, and is asked to choose the “right” picture. 6 test items where *ili* was used with clausemate negation; 2 “neither... nor” items and 2 “and” fillers.

Subjects: 21 3;11-6;10-year-old children who were native speakers of Russian.

Children’s mean age was 5;4. The entire experiment was conducted in Russian. Each child was told ten short stories individually.

The storyline:

Lion hid a key and a mirror in two identical boxes and promised to give a basket with strawberries to animals who found both the key and mirror. Subsequently, different animals took turns looking for the boxes. In the “or” condition, the child was shown a picture where an animal found one box and a picture where an animal found nothing.

“Or” condition test sentence:

(10) Lion did not give Cat a basket with strawberries because Cat did not find the key or the mirror.



Picture one.



Picture two.

Experimenter: show me the picture where this is shown.

Target picture: picture one.

### 3.3 Results

H<sub>1</sub>: children acquiring Russian go through a stage where they interpret ‘*ili*’ as “neither” in contexts where clausemate negation is present was supported.

16 out of 21 children consistently provided the incorrect “neither” interpretation of *ili* when clausemate negation was present. The Chi-Square = 696.24, df=6, N=21, p < .001.

Subject #	Age	Or	Neither... nor	And
1	4;5	0	2	2
2	4;11	6	0	2
3	5;4	0	2	2
4	5;3	0	2	2
5	5;5	0	1	2
6	4;5	0	2	2
7	5;2	0	2	2
8	6;10	0	2	2
9	6;3	6	0	1
10	6;2	6	0	2
11	3;11	0	2	2
12	6;6	4	0	2
13	5;9	0	2	2
14	5;4	0	2	2
15	4;5	1	1	2
16	5;5	0	2	2
17	5;2	0	2	2
18	5;5	0	2	2
19	6;3	0	2	2
20	6;5	0	2	2
21	3;5	3	2	1

Table 1. The Key: the number of correct responses in each condition is provided.

Shaded rows: children who consistently provided the erroneous “neither” reading responses.

6 Adult controls: “Or” condition: 100% of the target “I don’t know which” reading responses.

“Neither... nor” and “and” conditions: 100% of the target responses.

4. Discussion.

16 children who consistently provided the erroneous “neither” reading responses:

‘Or’ condition: the incorrect “neither” reading was computed 98.9% of the time;

‘Neither... nor’ condition: 93.7 % of correct “neither” responses;

‘And’ condition: 100% of correct “both” responses.

The 16 children in question are at a stage where they have not learned that *ili* is a PPI and interpret it under the scope of negation.

Four children who consistently computed the correct “I don’t know which” interpretation of *ili*:

‘Or’ condition: 91.7% of target “I don’t know which” interpretation responses;

‘Neither... nor’ condition: no correct “neither” responses

Subject #	Age	Or	Neither... nor	And
2	4;11	6	0	2
9	6;3	6	0	1
10	6;2	6	0	2
12	6;6	4	0	2

Table 2. The Key: the number of correct responses in each condition is provided.

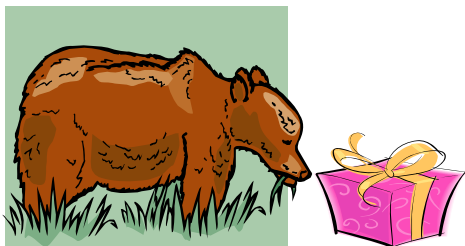
“Neither... nor” condition:

(11) Bear found neither the key nor the mirror.

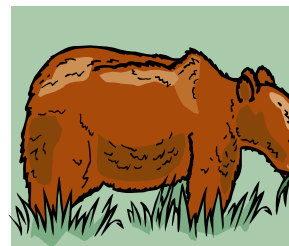
Experimenter: Show me a picture where this is shown.

Target response: a picture where Bear found nothing (Picture two).

The four children in question consistently picked the picture where an animal found one box, i.e., computed the reading where negation applied only to one DP.



Picture one.



Picture two.

“Or” condition:

(12) Cat did not find the key or the mirror.

Experimenter: Show me a picture where this is shown.

Target response: a picture where Cat found one box.

*Child’s erroneous “one DP” interpretation:* Cat either did not find the key or found the mirror. If the child misinterprets (12) in this manner, given a choice between a picture where Cat found one box and a picture where Cat found nothing, the child will pick a picture where Cat found one box. The four children consistently provided this response.

#### 4.1 PPI Parameter

I proposed that the default setting of the PPI parameter is “-PPI.” The fact that the initial setting of the PPI parameter is “-PPI” gives rise to a learnability problem.

(13) Cat did not find the key or the mirror.

Preferred “neither” reading: Cat did not find the key and Cat did not find the mirror.

Possible “I don’t know which” reading: Cat did not find the key or Cat did not find the mirror.

(14) Koška ne našla klučik ili zerkal’ce

cat not find key or mirror

‘Cat did not find the key or Cat did not find the mirror.’

“I don’t know which” reading: Cat did not find the key or Cat did not find the mirror.

If a child acquiring Russian goes through an English stage where (14) is interpreted as having the “neither” and “I don’t know which” readings, her task is to arrive at a grammar where (14) is interpreted as having just the “I don’t know which” reading.

Learnability problem: The child will hear sentences such as (14) in contexts where the “I don’t know which” reading is relevant, and she will be able to interpret them on this reading without changing the setting of the PPI parameter because this reading is licit in languages where the setting of the PPI parameter is “-PPI,” such as English.

Trigger for resetting the PPI parameter:

(15) Ona ne budet tancevat' ili pet'  
she not will dance or sing  
'She will not dance or she will not sing'

"I don't know which" reading: She will not dance or she will not sing.

(16) She will not dance or sing.

"Neither" reading: she will neither dance nor sing.

Crucially, (16) does not have an "I don't know which" reading. To arrive at the "I don't know which" reading, the child needs to reset the value of the disjunction parameter to "+PPI."

## 5. Summary

It was hypothesized that the default setting of the PPI parameter is "-PPI." The data provided evidence for this prediction. Children acquiring Russian go through an "English" "-PPI" stage in interpreting *ili* when clausemate negation is present. A specific trigger for changing the setting of the PPI parameter was proposed.

3-6-year-old children who participated in the present experiment have not reset the value of the PPI parameter. The fact that the Russian disjunction operator has the status of a PPI is acquired late because of the learnability problem that was discussed here. Additionally, it is likely that the trigger for changing the setting of the parameter to "+PPI" is rare in the child's input.

### References

- Chierchia, Genaro, Stephen Crain, Maria Teresa Guasti, Andrea Gualmini, and Luisa Meroni. (2001). The Acquisition of Disjunction: Evidence for a Grammatical View of Scalar Implicatures. *BUCLD 25 Proceedings*, ed. Anna H.-J. Do et al. 157-168. Somerville, MA: Cascadilla Press.
- Crain, S., Gardner, A., Gualmini, A. & Rabin, B. (2002). Children's Command of Negation. *Proceedings of TCP 2002*, Hitsuji Publishing Company, Tokyo.
- Gualmini, Andrea, Stephen Crain, and Luisa Meroni. (2000). Acquisition of Disjunction in Conditional Sentences. *BUCLD 24 Proceedings*, ed. S. Catherine Howell et al., 367-378. Somerville, MA: Cascadilla Press.
- Szabolcsi, Anna. (2002). Hungarian Disjunction and Positive Polarity. In Kenesei and Siptar (eds.) *Approaches to Hungarian 8*. Budapest: Akademiai Kiado.
- Szabolcsi, Anna. (2004). Positive Polarity – Negative Polarity. *Natural Language and Linguistic Theory* 22, 409-452.