

## Multiple interrogatives: Bulgarian vs. Polish, child and adult<sup>1</sup>

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### 1. Introduction

GOAL: (i) propose a syntactic and semantic analysis of multiple wh-questions in Bulgarian and Polish, and (ii) discuss the acquisition of multiple interrogatives.

(1) Wh-movement typology (see Bošković 2002)

- |   |  |
|---|--|
| a. <i>Chinese</i> : no overt movement<br><i>John gei-le shei shenme?</i><br>John give perf. who what<br>'What did John give to whom?' | c. <i>French</i> : both options <sup>2</sup><br>(i) <i>Qu' a-t-il donné à qui?</i><br>What has he given to who<br>(ii) <i>Il a donné quoi à qui?</i><br>He has given what to who |
| b. <i>English</i> : overt movement (1WH)<br>What did John give to whom?   | d. <i>Bulgarian</i> : overt movement (all WHs)<br><i>Na kogo kakvo dade Ivan?</i><br>To whom what gave Ivan?<br>'What did Ivan give to whom?'                                    |

### 1.1. Previous studies on multiple wh-interrogatives

MWF: since Wachowicz (1974).

Typology among MWF languages: since Rudin (1988): two types of MWF

(2) Typology of MWF languages (Rudin 1988)

- a. *Koj kogo vižda?* (Bulgarian): all WHs in Spec,CP<sup>3</sup>  
who whom sees  
'Who sees whom?'

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<sup>2</sup> French should not be considered a mixture of the English and Chinese type. Bošković (2002) claims that the wh-in-situ strategy is very limited in French. In-situ wh-phrases are allowed in short distance null C matrix questions but not in embedded, long distance, and overt C questions.

<sup>3</sup> Since Chomsky (1986) it is generally accepted that the landing site for wh-movement is the Specifier of the complementizer system.

- b. *Kto co robił?* (Polish): one WH in Spec,CP, the rest in IP  
 Who what did  
 ‘Who did what?’

**Two typological differences we are interested in:** (i) constituency of the WHs and (ii) Superiority effects.

### 1.1.1. Typological difference 1: Constituency of the WHs

Further differences Bulgarian/Polish: constituency of the fronted wh-phrases.

(3) Bulgarian: all WHs form a unique constituent (from Rudin (1988: 461-471))

*Clitics:*

- a. *Koj kakvo ti e kazal?*  
 Who what you (Dat.Cl) has told  
 Who told you what?  
 a’ \**Koj ti e kakvo kazal?*  
 Who you (Dat.Cl) has what told

*Adverbials:*

- b. *Zavisi ot tova, koj kogo prŭv e udaril.*  
 Depends on this who whom first has hit  
 It depends on who hit whom first.  
 b’ \**Zavisi ot tova, koj prŭv kogo e udaril.*  
 Depends on this who first whom has hit

*Parentheticals:*

- c. *Spored tebe koj kakvo e kazal?*  
 According to you who what has said  
 Who, in your opinion, said what?  
 c’. ?\**Koj, spored tebe, kakvo e kazal?*  
 Who according to you what has said

*Relativizing:*

- d. *Koj kakvoto iska...*  
 Who what-Def wants  
 Whoever wants whatever  
 d’. \**Koj-to kakvo iska...*  
 Who-Def what wants

(4) Polish: allows intervening material (from Rudin (1988: 465-472))

*Clitics:*

- a. *Kto by komu jaką napisal książkę?* (Second position CL)  
 Who would to whom what kind write book  
 ‘Who would write what kind of book to whom?’  
 a’. \**Kto komu by jaką napisal książkę?*  
 Who to whom would what kind write book  
 a’’. *Kto komu jaką by napisal książkę?* (CL adjacent to V)  
 Who to whom what kind would write book

*Parentheticals:*

- b. *Kto według ciebie komu co dał?*  
Who according to you to whom what gave  
'Who in your opinion gave what to whom?'
- b'. \**Kto komu według ciebie co dał?*  
Who to whom according to you what gave
- b''. *Kto komu co według ciebie dał?*  
Who to whom what according to you gave

### 1.1.2. Typological difference 2: Superiority effects

Further differences Bulgarian/Polish: Superiority effects<sup>4</sup>

(5) Bulgarian: shows Superiority (from Rudin (1988: 472-473))

- a. *Koj kogo vižda?* *NOM > ACC*  
who-NOM whom-ACC sees  
'Who sees whom?'
- b. \**Kogo koj vižda?* *\*ACC > NOM*  
whom who sees

- c. *Koj kogo na kogo e pokazal?* *Subject- Direct Object- Indirect Object*  
Who whom to whom has pointed out  
'Who pointed out whom to whom?'

(6) Polish (from Rudin (1988: 474)): free WH order (we will go against this)

- a. *Kogo komu przedstawiłeś?* *DO > IO*  
Who to whom introduced2.ps.sg  
'Whom did you introduce to whom?'
- b. *Komu kogo przedstawiłeś?* *IO > DO*  
to whom whom introduced2.ps.sg
- c. *Kto co robił?* *NOM > ACC*  
Who what did  
'Who did what?'
- d. *Co kto robił?* *ACC > NOM*  
What who did

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<sup>4</sup> Chomsky's (1973) formulation of the Superiority condition (i) accounts for the contrast between (ii) and (iii) in English where *who* is superior to *what*.

(i) No rule can involve X, Y in the structure ..X...[...Z...WYV...] where the rule applies ambiguously to Z and Y, and Z is superior to Y. The category A is superior to the category B if every major category dominating A dominates B as well but not conversely.

(ii) *Who<sub>i</sub>* did John tell *t<sub>i</sub>* that he should buy *what*?

(iii) ?\**What<sub>i</sub>* did John tell *who* that he should buy *t<sub>i</sub>*?

The effects of the Superiority Condition are economy based and follow from the requirement that the [+wh] feature of C be checked in the most economical way (i.e. through the shortest movement possible).

Conclusion: MWF constructions in Bulgarian/Polish: different properties, hence different structure.

### 1.1.3. Syntactic representation and landing site

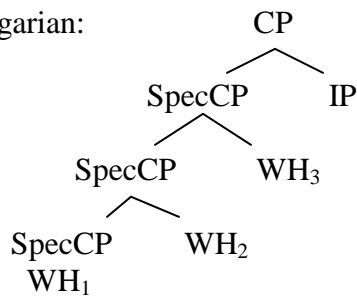
Rudin's account: difference in setting a parameter (7):

(7) *The multiply-filled Spec,CP hypothesis*: Spec,CP can contain multiple wh-words at S-structure in Bulgarian but only one in Polish.<sup>5</sup>

Bulgarian vs. Polish: WHs target a different landing site.

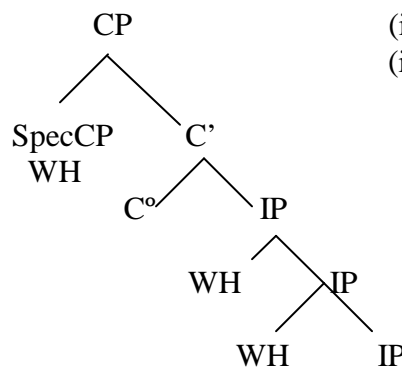
- (8) a. Bulgarian:  $[_{CP}[_{SPEC,CP} WH WH WH] [_{IP} \dots]]$  (i.e. adjoins all of the WHs to Spec,CP)  
 b. Polish:  $[_{CP}[_{SPEC,CP} [WH]] [_{IP} WH WH \dots]]$  (i.e. one WH to Spec,CP, the rest to IP)

(9) a. Bulgarian:



- (i) WH<sub>1</sub> substituted into Spec,CP  
 (ii) WH<sub>2</sub> et seq. adjoin to SpecCP  
 (iii) adjunction to the right

b. Polish:



- (i) only one WH substituted into Spec,CP  
 (ii) further WHs adjoin to IP

BULGARIAN: (i) wh-words A'-bind their traces + Superiority effects (5) vs. Polish not (6).

(ii) WHs in Spec,CP, hence indivisible unit (3) vs. Polish not (4).

DRAWBACKS: movement to the right (cf. Kayne 1994), so a modification is needed.

### 1.2. Bošković (1999, 2002)

► Two mechanisms of 'wh-fronting': (i) pure (syntactic) *wh-movement* (to Spec,CP to check the u[+wh] feature of C°), and (ii) *focus movement* ('non-wh-

<sup>5</sup> This reminds us of Pesetsky's (2000) C<sub>mult-spec</sub> vs. C<sub>1-spec</sub> distinction.

fronting'; licensed by the [+focus] feature of C° or Foc° and due to the *inherent focus feature* of WHs)

**NB: Diagnostics: (i) +Superiority = wh-movement (e.g. Bulgarian)  
(ii) no Superiority = focus movement (e.g. Polish)**

- ❖ Wh-movement (to Spec,CP): C° bears an u[+wh] feature and via *Attract Closest* of Chomsky (1995) assures that WH<sub>1</sub> moves first to check this feature, hence *Superiority effects observed*.
- ❖ Focus movement (to Spec,CP or some lower FocP forced by the [*attract-all-focus*] feature of C°/Foc°):<sup>6</sup> *not sensitive to Superiority*: it does not matter in which order wh-phrases will check their inherent focus features and check the attract-all-focus feature of the attractor (the same number of maximal projections is crossed).

### MODIFIED ANALYSIS:

► **SIMPLIFY THE DIFFERENCE BETWEEN WH- AND FOCUS MOVEMENT:**  
dedicated projections for each type of movement:

- **Wh-movement:** C° bears a u[+wh] feature and attracts WHs to Spec,CP to check this feature.
- **Focus movement:** Foc° has a u[+focus] feature and attracts the inherently focused WHs to Spec,FocP to check this feature.

**CLAIM:** (i) Bulgarian: all WHs undergo wh-movement to Spec,CP; C° is an *attract-all-wh* head (as in Rudin (1988));

(ii) Polish: one WH undergoes wh-movement to Spec,CP (C° = *attract-1-wh* head) (Rudin (1988)), the rest move to Spec,FocP.<sup>7</sup>

### AGAINST BOŠKOVIĆ (1999, 2002) CLAIMS:

- ❖ Bulgarian: Only the first WH shows Superiority effects so only it moves to Spec,CP checking the u[+wh] feature of C° (C° = an attract-1-wh head) obeying *Attract Closest* (see (5a)); **WH<sub>2</sub> et seq. no Superiority effects so they undergo focus movement to Spec,CP** (C° is an attract-all-focus head in Bulgarian), **hence intervening material allowed** (contra Rudin (1988) and our data).
- ❖ Polish (like Russian): **all WHs free order so they all undergo focus movement** (to a lower projection).<sup>8</sup>

<sup>6</sup> Since Chomsky (1995) it is believed that one and the same head can attract a particular feature more than once.

<sup>7</sup> Or else, we can treat attract-all-wh C° in Bulgarian as C<sub>mult-spec</sub> and attract-1-wh C° in Polish as C°<sub>1-spec</sub> (see Pesetsky 2000).

<sup>8</sup> Bošković (1999, 2002) claims that when we observe Superiority in Serbo-Croatian, then WH<sub>1</sub> moves to Spec,CP (the rest of WHs move to FocP). However, for him, Polish behaves like Russian in that it never shows Superiority effects; hence Polish wh-phrases will always undergo focus movement.

**DATA:**

- ▶ Bulgarian: (i) **strict superiority** between *all* WHs; (ii) **no intervening material**; **CONCLUSION: ALL WHS UNDERGO WH-MOVEMENT; HENCE, AGAINST FOCUS MOVEMENT OF WH<sub>2</sub> ET SEQ. IN BULGARIAN.**<sup>9</sup>
- ▶ Polish: (i) **superiority WH<sub>1</sub> > WH<sub>2</sub>**, hence the first WH undergoes wh-movement to Spec,CP, i.e. **NOT ALL WHS UNDERGO FOCUS MOVEMENT.**

1.2.1. Empirical evidence against Bošković (1999, 2002)

▶ **Evidence 1: Superiority in Polish:**

- Polish: NOM > ACC (i.e. Superiority effects), hence WH<sub>1</sub> moves to Spec,CP; WH<sub>2</sub> and WH<sub>3</sub> appear in a free order, hence focus movement; Consequence: not all WHs undergo focus movement as suggested.

- (10) a. *Kto co kupił?* (unmarked)  
Who what bought  
'Who bought what?'
- b. *?Co kto kupił?* (marked)  
'what who bought'

▶ **Evidence 2: Strict word order of WH<sub>2</sub> et seq. in Bulgarian:**

Bulgarian: all WHs appear in a strict order, i.e. WH<sub>2</sub> and WH<sub>3</sub> not in a free order as predicted; hence, **WH<sub>2</sub> and WH<sub>3</sub> do not undergo focus movement** as suggested in Bošković (1999, 2002) but rather wh-movement (to Spec,CP).

(11) Krapova and Cinque (2008: 324): strict WH hierarchy:

<i>koj</i>	>	<i>kogo</i>	>	<i>na kogo</i>	>	<i>koga</i>	>	<i>kūde</i>	>	<i>kakvo/kolko N</i>	>	<i>kakvo/na kolko N</i>	>	<i>kak</i>			
who		whom		to whom		when		where		what/how many N		what/to how many N		how			
				+human <sup>10</sup>		>		adjuncts		>		subject +/- human		>	object +/- human	>	adjunct

- (12) a. *na kogo koga kak šte pomogneš?* (Krapova and Cinque 2008: fn. 1)  
to whom when how will help-2ps.sg  
'Whom will you help when and how?'

<sup>9</sup> Wh-fronting is subsumed under focus movement (i.e. wh-elements undergo focus movement) if contrastively focused non-wh-phrases are forced to move (e.g. Serbo-Croatian is claimed to be such a language (see Stjepanovic (1998) cited in Bošković (2002)). However, in Bulgarian, we can have contrastively focused elements in-situ which suggests that wh-phrases should not undergo focus movement in this language:

- (i) *Parite gi dadoh NA IVAN*  
money-the it gave-I **to Ivan**  
'I gave the money **to Ivan** (not to Mary)'

<sup>10</sup> Krapova and Cinque (2008) suggest that arguments move from their Merge position to different spaces depending on their specification for the feature [human] (The Animacy hierarchy of the typological tradition).

a'. \**na kogo kak koga šte pomogneš*  
to whom how when will help-2ps.sg

b. Apparent free order of *kakvo* 'what': *kakvo* > *kogo* 'whom'; *kakvo* > *na kogo* 'to whom';<sup>11</sup> *kakvo* > *koga* 'when'; *kakvo* > *kūde* 'where'

?*kakvo kūde šte složiš?* (*kakvo*: D-linked reading, hence in TopP above *kūde*)  
What where will put-2ps.sg  
'What will you put where?'

c. wh-adjuncts: *koga* 'when' > *kūde* 'where' > *kak* 'how':<sup>12</sup>

- (i) *koga kūde šte hodiš tova ljato?*  
When where will go-2Sg this summer  
'When will you go where, this summer?'
- (ii) \**kūde koga šte hodiš tova ljato?*  
'Where when will go-2Sg this summer'

► **Evidence 3: Echo-questions: no focus movement in Bulgarian:**

- Bošković (1999, 2002): Slavic languages have *attract-all-focus* head so inherently focused wh-elements obligatorily move even in echo-questions, (i.e. when they are not licensed for checking the [+wh] feature of C°).<sup>13</sup>
- Data: both Polish and Bulgarian allow WH in-situ in echo-questions (on both the surprise and request-for-repetition reading).
- Hence, [+focus] is not the driving force of 'echo-wh-fronting'.

(13) Echo-questions:

a. Bulgarian:

*Ivan e kupil kakvo?*  
Ivan is bought what  
'Ivan bought what?'

b. Polish:

*Iwan kupił co?*  
'Ivan bought what?'

► **Evidence 4: Parentheticals: no focus movement in Bulgarian:**

- Bošković (2002): parentheticals can intervene between the WHs in Bulgarian (*contra* Rudin 1988, see (3)), i.e. the WHs are not an indivisible unit. Hence, support for the claim that the first wh-element lands in Spec,CP whereas the rest are subject to focus movement.

<sup>11</sup> Krapova and Cinque (2008: 323, fn. 6) mention that the order *kakvo* 'what' > *na kogo* 'to whom' is more marked and that there are speakers who seem to fully accept or fully reject such examples.

(i) ?(?) *kakvo na kogo e pokazal Ivan?*

What to whom has shown Ivan 'What did Ivan show to whom?'

<sup>12</sup> This order corresponds to the UG hierarchy of Merge of these adjuncts, i.e. Temporal adjuncts are higher than Locative adjuncts, which are in turn higher than Manner adjuncts (Cinque (2002) cited in Krapova and Cinque (2008)).

<sup>13</sup> C° needs not be present in echo-questions and the clause needs not be typed as interrogative.

- **However**, Krapova and Cinque (2008): when a parenthetical intervenes between the WHs, we have *clitic resumption* which suggests that the highest WH has further moved to a CLLD Spec,TopP position.<sup>14</sup>
- Hence, wh-elements are only *apparently* divisible.

(14) Parentheticals: obligatory CL resumption of the fronted WH: the fronted WH occupies a CLLD Top position (from Krapova and Cinque 2008: 326)

- a. *Koja kartina, spored tebe, kude \*(ja) e risuval tozi hudožnik?*  
Which painting, according to you, where \*(it) is painted this artist  
'According to you, which painting did this artist paint where?'
- b. *Koja knjiga, spored tebe, na koj prijatelj da (\*mu) ja dam?*  
Which book, according to you, to which friend should \*(him) it give-1ps.sg  
'According to you, which book should I give to which friend?'
- c. *Na koj prijatelj, spored tebe, koja knjiga da mu (\*ja) dam?*  
To which friend, according to you, which book should \*(him) it give-1ps.sg  
'According to you, to which friend should I give which book?'

(15) Krapova and Cinque (2008: 327-329): D-linked and non-D-linked WH order:

a. PARTH [XP <sub>CL-resumed D-linked WH</sub> ]	PARTH [YP <sub>D-linked WH</sub> ]	[ZP <sub>non-D-linked WH</sub> [IP CL <sub>XP</sub> ...
↓ CLLD TopP	↓ D-linked phrases	↓ non-D-linked phrases = traditional CP or our IntP
b. WHs' landing site		(strict hierarchy (see (11)))
<i>(na) koj</i> '(to) who'	<i>(na) koj/koja/koe/koi</i>	<i>kogo</i> 'whom'
<i>koja, koe, koi</i> (N) 'which (N)'	'(to) who'	> <i>na kogo</i> 'to whom'
<i>(na) kogo</i> '(to) whom'	<i>(na) kogo</i> '(to) whom'	> <i>koga</i> 'when'
*? <i>kakvo</i> 'what'	<i>kakvo</i> (marked) 'what'	> <i>kude</i> 'where'
	<i>kude</i> (marked) 'where'	> <i>kakvo<sub>subj</sub>/kolko<sub>subj</sub></i> N (subj)
	<i>koga</i> (marked) 'when'	> <i>kakvo<sub>obj</sub>/na kolko<sub>obj</sub></i> N (obj)
		> <i>kak</i> 'how'

1.2.2. Recapitulation: *Contra* Bošković (1999, 2002):

❖ On Bulgarian:

- (i) No free word order between WH<sub>2</sub> et seq. but rather strict (iterative) superiority of all WHs (see Krapova and Cinque 2008). Hence, WH<sub>2</sub> et seq. undergo wh-movement, not focus movement.
- (ii) Echo-questions are perfectly acceptable in wh-in-situ constructions (see also Rudin (1988)); hence, no Attract-all-focus feature forcing echo-wh-fronting.

<sup>14</sup> See Rizzi (1997) who claims that clitic resumption identifies Topic-Comment structures, not Operator-Variable structures (i.e. not bare WHs).

(iii) No intervening material between the WHs; hence WH<sub>2</sub> et seq. do not undergo focus movement and are an indivisible unit.

❖ On Polish: (i) No absolute free order between the WHs; WH<sub>1</sub> fronts first, hence, not all WHs undergo focus movement (see (10)).

## 2. Syntactic analysis of MWF in Bulgarian and Polish

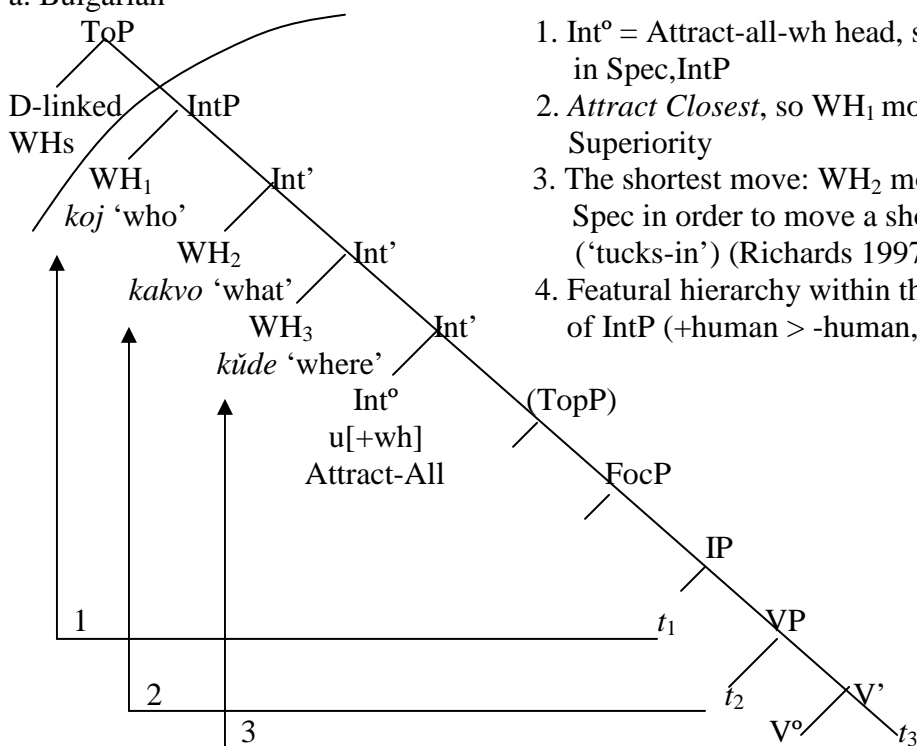
Subdivide Rizzi's (1997) FORCE into interrogative head (INT) and a declarative (Force declarative): **FORCE - TOP\* - INT - (TOP\*) - FOC - (TOP\*)**

### ► PROPOSAL:

- Bulgarian: all WHs move to multiple specifiers of IntP<sup>15</sup> in a 'tuck-in' manner as in Richards (1997): Int° = Attract-all-wh head which operates at all times in a way which maximally preserves the base c-command relations among the WHs. Hence, strict Superiority accounted for.<sup>16</sup>

(16) Syntactic representation of MWF constructions

a. Bulgarian



<sup>15</sup> Spec,IntP is usually regarded as the landing site of 'why'. However, in both Bulgarian and Polish, WHs and 'why' can co-occur in a multiple wh-question which suggests that WHs can, in principle, land there:

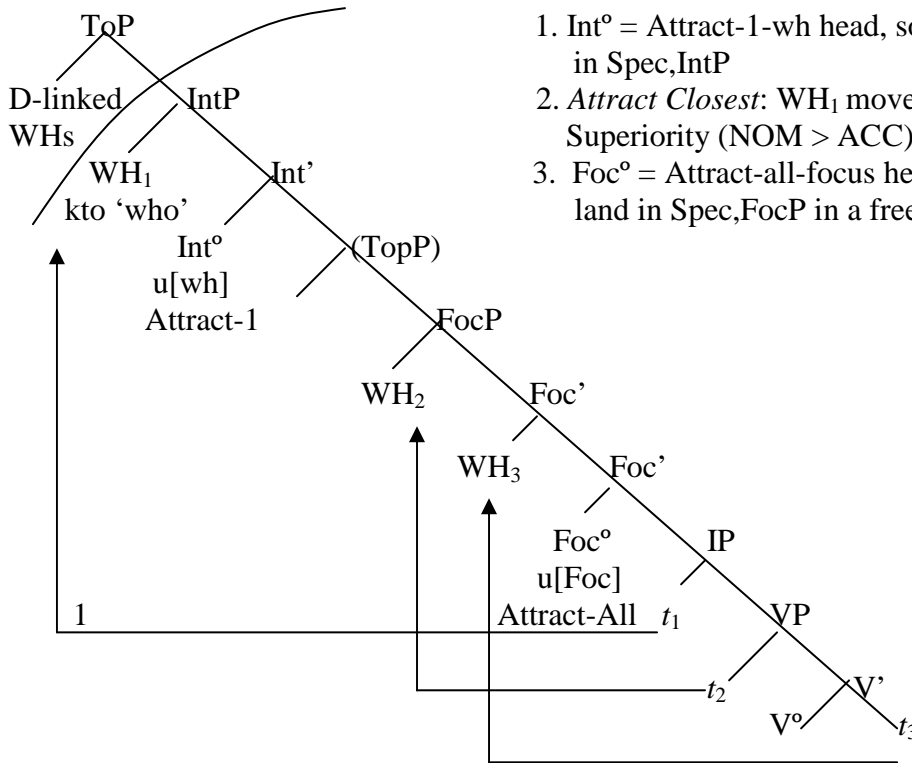
- |  |   |
|--|---|
| (i) <i>koj zašto se e jadosal?</i> (Bulgarian) | (iii) <i>Kto dlaczego się zezłościł?</i> (Polish) |
| Who why refl is angered                        | Who why refl got angry                            |
| 'Who has got angry and why?'                   | (iv) <i>Kto gdzie dlaczego idzie?</i>             |
| (ii) <i>koj kude zašto otiva?</i>              | who where why goes                                |
| Who where why goes                             | (v) <i>Kto dlaczego gdzie idzie?</i>              |
| 'Who goes where and why?'                      | who why where goes                                |

<sup>16</sup> As Richards (1997) suggests, this can be treated as an instance of 'Structural Economy' which requires that existing c-command relations be retained whenever possible. In this way *Shortest move* is measured not in terms of how many nodes are crossed, but of how many c-command relations are altered.

► PROPOSAL:

- Polish: only the first WH moves to Spec,IntP obeying Superiority, the rest being subject to focus movement:  $Foc^{\circ}$  = Attract-all-focus head, moving  $WH_2$  et seq. to Spec,FocP should not abide to economy considerations and therefore no Superiority is observed between  $WH_2$  et seq.

b. Polish<sup>17</sup>



1.  $Int^{\circ}$  = Attract-1-wh head, so 1 WH lands in Spec,IntP
2. *Attract Closest*:  $WH_1$  moves first, hence Superiority (NOM > ACC)
3.  $Foc^{\circ}$  = Attract-all-focus head, so all WHs land in Spec,FocP in a free manner

- *Tuck-in*: not counter cyclic as suggested in Richards (1997): all WHs involve feature checking with the same head,  $C^{\circ}/Foc^{\circ}$ , so all occur at the same cycle.<sup>18</sup>

► IN FAVOUR OF OUR ANALYSIS: correctly accounts for:

- Bulgarian: (i) strict order and Superiority among all WHs (see (11)) since all of them undergo wh-movement in accordance with the *Attract Closest*; (ii) no intervening material allowed as all WHs land in multiple specifiers.
- Polish: (i) NOM > ACC, hence  $WH_1$  undergoes wh-movement to Spec,IntP; intervening material is allowed as  $WH_2$  et seq. land in a lower Spec,FocP position;  $WH_2$  et seq. show free word order.

<sup>17</sup> (16a) corresponds to Richards' (1997) CP-absorption languages where all WHs land in multiple Specifiers of CP; (16b) is similar with Richards' IP-absorption languages with the difference here being that WHs land in multiples Specifiers of FocP, not IP as in Richards (1997).

<sup>18</sup> According to Chomsky ((1996, class lectures), cited in Richards (1997)), cyclicity consists not of a requirement that every operation expand the tree but of a requirement that every operation involve a feature on the head which projects the maximal projection at the root of the tree.

### 3. Some brief notes on the semantics of multiple interrogatives

Hagstrom (1998): Multiple wh-questions (in wh-in-situ languages): two readings:

- (i) **Single-Pair reading** (SP) = set of propositions
- (ii) **Pair-List reading** (PL) = set of questions (set of set of propositions),  
the unmarked option.

(17) PL Scenario: *John is at a formal dinner where there are diplomats and journalists. Each journalist was invited by a different diplomat. To find out the details, John asks the host:* (from Grebenyova 2004)

- a. Who invited who to the dinner?
- b. **Answer:** listing propositions involving ordered pairs  
- *Mr. Smith invited Mr. Jones; Ms. Black invited Mr. Green, etc.*

SP: English and Bulgarian lack SP reading in non-D-linked wh-questions; a D-linked WH is used instead:

(18) SP Scenario: *John knows that a very important diplomat invited a famous journalist to a private dinner. To find out the details, John asks the caterer:*

- a. Which diplomat invited which journalist to the dinner? English (SP)
- a'. *Koj diplomat koj žurnalist pokani na večerja?* Bulgarian (SP)  
which diplomat which journalist invited to dinner
- b. Answer: *Ms. Black invited Mr. Smith.*

(19) Polish: both SP/PL

- a. *Kto gdzie będzie spał?* Non-D-linked WHs: SP/PL  
Who where will sleep  
'Who will sleep where?'
- b. *?Jaki dyplomata jakiego dziennikarza zaprosił na kolację?* D-linked WHs  
which diplomat which journalist invited to dinner
- b'. *Jaki dyplomata zaprosił jakiego dziennikarza na kolację?* PL/SP  
which diplomat invited which journalist to dinner

#### **Analysis 1: Hagstrom (1998):**

- PL: *Q-morpheme*<sup>19</sup> merged with the lowest WH (20a)
- SP: *Q-morpheme* merged in a higher position above the highest WH (20b)

- (20) a. PL: [<sub>CP</sub> **Qj**-C° ... [<sub>TP</sub> ... WH<sub>1</sub> ... V ... **tj** WH<sub>2</sub> ...]] Q merges with WH<sub>2</sub>
- b. SP: [<sub>CP</sub> **Qj**-C° ... [<sub>FP</sub> **tj**-F° [<sub>TP</sub> ... WH<sub>1</sub> ... V ... WH<sub>2</sub> ...]] Q scopes over both WHs<sup>20</sup>

<sup>19</sup> An abstract Q-morpheme types the clause interrogative and it may need phonetic support.

<sup>20</sup> We will not enter into details on the semantic analysis of the PL/SP readings. Hagstrom (1998) proposes that the Q-morpheme is an existential quantifier over choice functions (i.e. a function which applies to a non-empty set and yields a member of that set). For him, the Q-morpheme merges in a clause

Bošković (1999, 2002, 2003):

- Lack of SP due to obligatory syntactic wh-movement (English, Bulgarian)
- SP due to the absence of such movement (Serbo-Croatian, Polish).<sup>21</sup>

**HOWEVER:** Polish (in our analysis): overt wh-movement (of the first WH), hence erroneously predicts that Polish will lack SP.

Grebenyova (2004, 2006): Cross-linguistic variation wrt SP: due to the lexical differences of the Q-morpheme.

(21) Q-morpheme in wh-questions

- a. *Koj kogo li e pokanil na večerja?* Bulgarian: PL/\*SP  
Who whom Q aux invited to dinner  
'Who has invited whom to dinner?'
- b. *Ko li je koga pozvao na večeru?*<sup>22</sup> Serbo-Croatian: SP/\*PL  
who Q aux whom invited to dinner  
'Who invited who to the dinner?'
- c. *Darega dareo syokuzini manekimasita-ka?* Japanese: PL/SP  
who who dinner invited-Q

Bulgarian (21a): no SP-Q-morpheme; PL Q-morpheme (null or overt 'li',<sup>23</sup>)

Serbo-Croatian (21b): two Q-morphemes: SP (overt 'li' or null) and PL (null)

Japanese (21c): *ka* ambiguous between PL/SP.

Polish: no overt Q-morpheme so we have null SP and PL morphemes

► **Variation:** due to lexical difference of the Q-morpheme

PL: the Q-morpheme is merged with the lower WH (20a), i.e. selects WhP

SP: the Q-morpheme has to be generated in FocP (20b), i.e. selects FocP

**Lack of SP** (Bulgarian, Russian, English, etc): the Q-morpheme is lexically specified in such a way that it never selects for a FocP but only for a Wh-phrase.

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internal position and then moves to CP (20). On a PL reading, Q merges with the lower WH<sub>2</sub> (20a), and the choice function takes WH<sub>2</sub> (a set of individuals) as its argument, returning an individual, which is then taken by the verb as its argument. WH<sub>1</sub> is outside the scope of Q, so it has a set as its value. Flexible functional application applies and a composition is performed with each of the individuals from the set of individuals of WH<sub>1</sub> resulting thus in a set of sets of propositions (one set of proposition for each value in the set of WH<sub>1</sub>). On a SP reading, on the other hand (20b), both WHs are within the scope of Q (i.e. they are contained within the choice function's variable argument), and as a consequence WH<sub>1</sub> reduces its set to one individual only (in the same way as WH<sub>2</sub> reduces its set in (20a)). The final result is a set of propositions.

<sup>21</sup> Bošković (2003) claims that syntactic wh-movement (Bulgarian for him) in the derivation of the SP reading violates Relativized Minimality. In Bulgarian (and English) the wh-phrases move to Spec,CP by crossing the Q-morpheme which also carries [+wh] feature. This can be generalized to all languages with overt syntactic wh-movement.

<sup>22</sup> The example is taken from Grebenyova (2003).

<sup>23</sup> 'li' in Bulgarian is the counterpart of the Q-morphemes *ka* and *no* in Japanese. In Bulgarian, 'li' is allowed in both yes-no and wh-questions whereas in Russian it is disallowed in the latter.

**Availability of SP:** (Polish): has two (null) entries of the Q-morpheme (SP/PL), one selecting a FocP (SP) and the other a Wh-phrase (PL).

#### 4. The acquisition of multiple interrogatives

Background: wh– movement is in place at 1;8 (i.e. by the earliest productions) (Guasti 2000). Rojina (2004), Grebenyova (2006a, 2006b) for Russian.

The acquisition of multiple interrogatives as a case of acquisition under poverty of stimulus: Grebenyova shows that multiple interrogatives are extremely scarce in the input the child is exposed to (study of Varvara’s CHILDES database, age range 1;7–2;11: one single occurrence of a multiple interrogative sentence)

We designed three tasks testing comprehension, elicitation, repetition

##### 4.1. Comprehension task

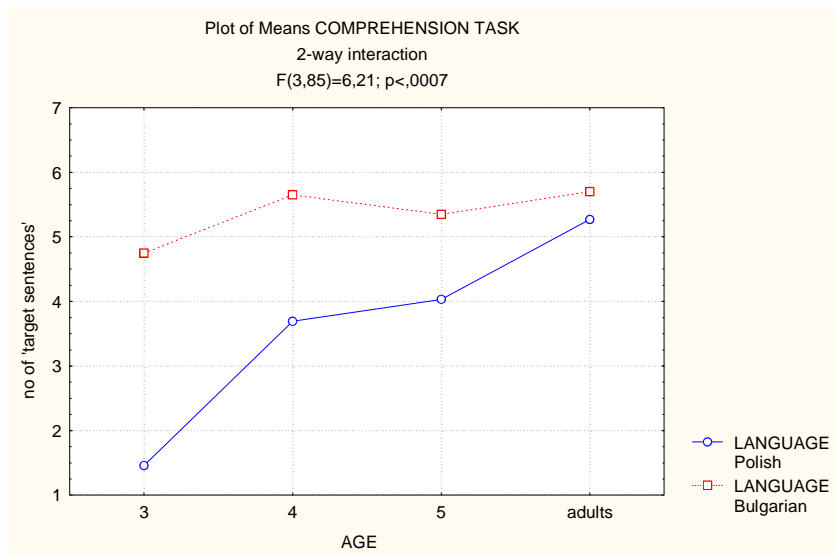
Items: 3 2-wh questions (22a), 3 3-wh- questions (22b), plus 3 single wh-questions as controls

- (22) a. *Koj kakvo pravi?*                      b. *Koj kakvo na kogo dava?*  
           Who what does                            who what to whom gives  
           ‘Who is doing what?’                    ‘Who is giving what to whom?’

Subjects in comprehension task

		age3	age4	age5	adult	
Polish	female	6	5	5	9	25
	male	6	8	10	4	28
	TOTAL	12	13	15	13	53
Bulgarian	female	5	5	4	6	20
	male	5	5	6	4	20
	TOTAL	10	10	10	10	40

- The number of target answers rose significantly with age
- There were significantly more target answers in 2-wh than in 3-wh questions in all comprehension trials
- Errors in multiple wh- questions consist in all cases of omission of an answer to one of the wh- questions



#### 4.1.1. Exhaustivity tested on the control questions

Background: Roeper, Schulz, Pearson & Reckling (2007) on English and German

- (23) Who is wearing a hat?  
 a. John, Mary, Jill, Ben.  
 b. #John.  
 c. #John and Mary

Children go through a singleton stage, in which they produce answers of type (b) (79% of English-speaking children, 52% of German-speaking children) this is later replaced by a stage in which exhaustive answers are provided, between 4 and 6. There is no intermediate stage in which plural non-exhaustive answers are given (plural non-exhaustive answers in their experiment were on 6%).

(24) Percentage of exhaustive responses by language group

age	German	English
5-year-olds	80%	27%
6-year-olds	85%	75%
7-year-olds	84%	74%

Cross-linguistic variation: exhaustivity markers

- (25) a. Who *all* is coming?  
 b. Wer kommt *alles*?

Exhaustivity markers make the response more likely to be exhaustive (from 97% to 100% in 5-year-old German-speaking children, from 75% to 91% in SLI 5-year-olds). But also sentences without the exhaustivity marker are more likely to be exhaustive (cf. German and English).

- (26) Exhaustivity items, Bulgarian
- a. *Koj ima kufar?*  
Who has a suitcase?
  - b. *Koi imat čadūr?*  
Who-pl have an umbrella?

The predominant answer for all subjects in Bulgarian was target (plural for both (26a) and (26b) answer types).

Proportion of predominant answer in each exhaustivity trial in Bulgarian

	3-yrs olds	4-yrs olds	5-yrs olds	adults
Exh.SG -1	80%	100%	100%	100%
Exh. PL	100%	100%	100%	100%
Exh. SG.-2	90%	100%	100%	100%

The predominant answer for all subjects in Polish was also target, but contrary to Bulgarian children there were no ceiling effect for children (only for adults).

Proportion of (overall) predominant answer in each Exhaustivity trial in Polish

	3-yrs olds	4-yrs olds	5-yrs olds	adults
Exh.SG -1	33,33%	30,77%	26,67%	100%
Exh. PL	58,33%	38,46%	46,67%	100%
Exh. SG.-2	58,33%	46,15%	60%	84,62%

The results for Polish show that even in age 5 many children give non-exhaustive answers (depending on the trial: from 40% to 60%), while in Bulgarian there is no difference in answers between children and adults. This may result from the existence of a plural marker in Bulgarian wh words, and thus replicate the contrast between English and German, only at a much earlier age. Consider also the effect of the availability of single-pair readings in Polish.

## 4.2. Repetition

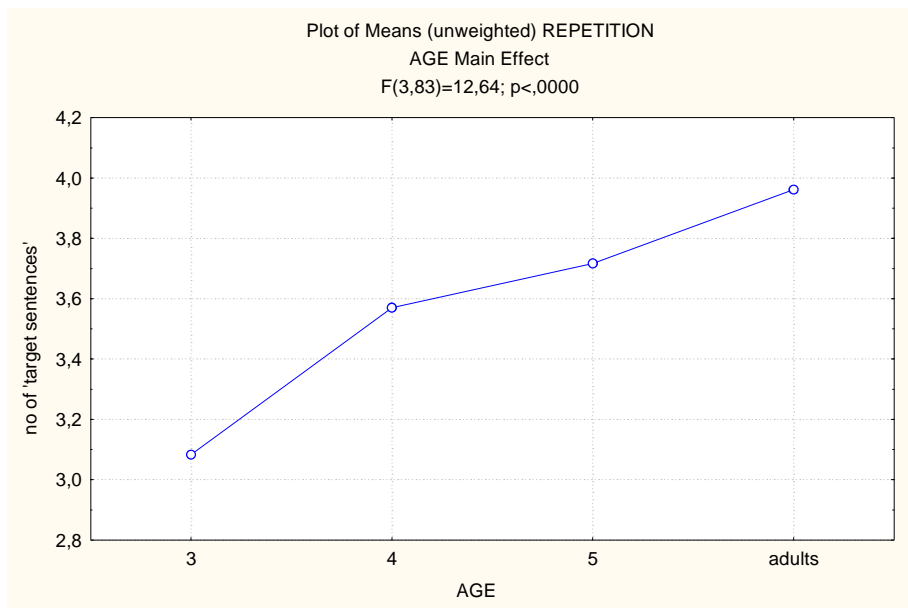
Items: 2 2-wh questions (27a), 2 3-wh-questions (27b), plus 4 single wh-questions as controls, and repetition of 6/7 ill formed wh- questions involving wh-in situ, Superiority violations and presence of intervening constituents (diff. in Bulgarian and Polish) (27c)

- (27) Repetition items, Bulgarian
- a. *Koj kogo vižda?*  
Who whom sees
  - b. *Koj kŭde kak e spal?*  
Who where how has slept
  - c. *\*Kogo koj vižda?*  
Whom who sees

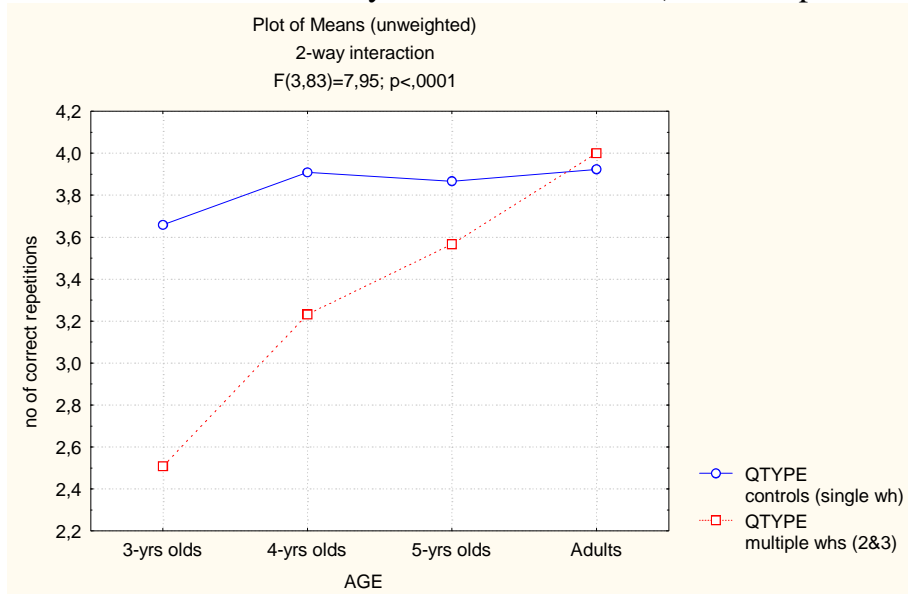
## Subjects in repetition task

		age3	age4	age5	adult	
Polish	female	6	4	5	9	24
	male	6	7	10	4	27
	TOTAL	12	11	15	13	51
Bulgarian	female	5	5	4	6	20
	male	5	5	6	4	20
	TOTAL	10	10	10	10	40

- There was no significant effect of language
- The number of correct repetitions significantly rose with age



- There were more correct repetitions in single than in multiple questions
- Single questions were stable across age while multiple rose significantly
- Errors consisted mainly of omission errors (as in comprehension)



The results of the repetition task with ill formed questions indicate (for 3-year-olds, but also 4 and 5-year-olds) awareness of the language-specific properties of multiple wh- interrogatives: children avoided intervening constituents (by omitting them) and Superiority violations (also by omitting constituents), and raised some wh- in situ, both in Bulgarian and Polish.

Further predictions (untested): If, as argued, Polish multiple interrogatives are an instance of both wh- and focus fronting, then we would expect multiple interrogatives and focus fronting to emerge *simultaneously* in the longitudinal development of individual children. This would not necessary hold of Bulgarian.

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