Intervention effects in adult grammar and language acquisition

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The issue

Intervention is a key concept both in syntactic theory and in the experimental study of language acquisition and adult processing.

When an element with certain characteristics intervenes between the source and the target of movement, the configuration is problematic in several respects:

(1) ... X ... Intervener ... Y ...
The issue

The problematic nature of this kind of configuration may manifest itself in different ways:

- Degraded acceptability for adult speakers in Weak Island contexts;
- Incapacity to compute the configuration in object A’-dependencies for children and in different forms of language-related pathologies;
- Slower processing in adults.

• Q: Are intervention effects in these domains amenable to a unified formal approach?
Constraints on extractions from Weak Islands

(1) What do you think John could buy __?
(2) * What do you wonder who could buy __?

(1’) **What** do you think **John** could buy __?

(2’) * **What** do you wonder **who** could buy __?
Relativized Minimality (Rizzi 1990, etc.)

In ... X ... Z ... Y ...

a local relation between X and Y is disrupted when there is a Z such that
1. Z is of the same type as X, and
2. Z intervenes hierarchically between X and Y

NB: Hierarchical intervention: Z c-commands Y and Z does not c-command X
Locality is computed on hierarchical representations

(3) You wonder [who left at five]

(4) *When do you wonder [ who left ___ ]

(5) [The uncertainty [about [who won]]] dissolved at five

(6) When did [the uncertainty [about [who won]]] dissolve ___ ?

Gradations of acceptability

(7) * What do you wonder who could buy __?
(8) ?? Which book do you wonder who could buy __?

Generalization: all other things being equal, a lexically restricted wh-phrase is more easily extractable from a weak island than a bare wh-element.

NB: other factors have been invoked, such as D-linking; but Villata et al. 2016 show that if (7) and (8) are given in contexts in which both wh-phrases are D-linked, (8) remains more acceptable. We will not address here additional factors such as arguments vs adjuncts, etc.
Relevance of the lexical restriction

(9) [**Combeen de problèmes**] peut-il résoudre __?
    ‘How many of problems can he solve?’

(10) **Combeen** peut-il résoudre [ ___ de problèmes]? 
    ‘How many can he solve of problems?’

(11) ? [**Combeen de problèmes**] ne sait-il pas [ **comment** résoudre __ ]
    ‘How many of problems does he not know how to solve?’

(12) * **Combeen** ne sait il pas [ **comment** résoudre [ ___ de problèmes ]]
    ‘How many does he not know how to solve of problems?’
Featural RM

\[ \begin{align*}
X & \quad Z & \quad Y \\
I) & +A & \ldots & +B & \ldots & <+A> & \quad \text{OK} & (\text{disjunction}) \\
II) & +A,+B & \ldots & +A & \ldots & <+A,+B> & \quad ?? & (\text{inclusion}) \\
III) & +A & \ldots & +A & \ldots & <+A> & \quad * & (\text{identity})
\end{align*} \]

where A, B are relevant morpho-syntactic features.
fRM and the distinctness hierarchy

(1) In ... X ... Z ... Y ... a local relation connecting X and Y is disrupted if Z intervenes and Z shares relevant morphosyntactic features with X.

(2) The degree of disruption depends on the degree of featural distinctness of Z w.r.t. X, evaluated against the following hierarchy:

1. Disjunction       OK
2. Inclusion         ??
3. Identity          *

NB: maximal distinctness of Z gives rise to minimal disruption.
The role of the lexical restriction

(1) **What** do you think **John** could buy __?  
   +Q  
   **DISJUNCTION**

(8) **?? Which book** do you wonder **who** could buy __?  
   +Q, +N  
   +Q  
   **INCLUSION**

(7) *** What** do you wonder **who** could buy __?  
   +Q  
   +Q  
   **IDENTITY**
Why is the lexical restriction taken into account in the computation of fRM?

Clearly, not all the features of X and Z are taken into account in the computation of locality. What features are relevant?

As we are looking at movement dependencies, it is natural that fRM should be sensitive to the features typically involved in movement.

+Q clearly triggers movement to the left periphery.

And +N? There is ample evidence that +N participates in defining the landing site of wh-movement in the cartography of the LP.
Lexical restriction as an attractor: North Eastern Italian Dialects

Munaro et al.: in certain North Eastern Italian dialects (Bellunese, etc.) lexically restricted and bare wh elements occupy different positions:

(1) **Con che tosat** à-tu parlà?
    ‘With which boy did you speak?’

(2) **Avé-o parlà de chi?** (Munaro 1999)
    ‘Have you spoken of whom?’

So, there must be distinct attractors for lexically restricted and bare wh elements.

(3) \( \ldots +Q +N \quad H \quad \ldots +Q \ldots \)
Lexical restriction and inversion in Italian

(1)a * Dove Gianni ha messo il libro?  
   ‘Where Gianni put the book?’

   b In che cassetto Gianni ha messo il libro?  
   ‘Into which drawer Gianni put the book?’

(2) Perché Gianni ha messo il libro nel cassetto?  (Rizzi 2001)  
   ‘Why Gianni put the book in the drawer?’

(3) ... +Q+N ... Perché Int... +Q ...
Wh – dass in Bavarian

(1) I mecht wissen... a. ... [was fiar a Hosn] dass a se kafft hod
   ‘I want to know...’ ‘what for trousers that he himself bought has’
   b. ... warum dass a se s’Lebn gnumma hod
      ‘why that he committed suicide’
   c. ... ?? wen dass a troffa hod
      ‘whom that he met has’
   d. ... ?* wos dass a gmacht hod
      ‘what that he done has’

Bayer & Brandner (2007), Grewendorf (2008): “phrasal wh” and warum are natural with dass;
bare wh elements are not (with some variation)

(2) .... +Q+N ... warum .... dass ... +Q ...
Bare and lexically restricted multiple questions in Romanian (Alboiu 2000)

(1)a  Cine cu cine a votat?  b  * Cu cine cine a votat?
     Who for whom voted?          For whom who voted?

(2)a  Cine cu care candidat a votat?  b  Cu care candidat cine a votat?
     Who for which candidate voted?  For which candidate who voted?

Bare wh elements occur in a fixed, hierarchy preserving, order (Richards 1998); lexically restricted elements can precede bare elements regardless of hierarchy preservation (see also Krapova & Cinque 2008 in Bulgarian). This suggests that lexically restricted elements are attracted by a distinct and higher attractor:

(3)   ... +Q+N   ... +Q ....
Young children understand subject relatives but not object relatives. Inspired by Grillo 2008 on agrammatism, FBR 2009 put forth the hypothesis that headed object relatives are hard because they involve an intervention configuration, in which the subject acts as an intervener:

(1) Show me the elephant that ___ is washing the lion

(2) Show me the elephant that the lion is washing ___
    +R+N                   +N
Testing the relevance of RM

FBR manipulated either the relative head or the intervener to make them featurally dissimilar, thus turning inclusion into disjunction: the RM approach would predict an improvement

(1) Headed object relative:

Show me the elephant that the lion is washing ____
+R+N +N

(2) Free object relative:

Show me who the lion is washing __
+R +N

(3) Headed object relative with a pronominal subject:

Show me the elephant that (they) are washing ___
+R+N +Pron
Results of FBR 2009
(children acquiring Hebrew 3;7 – 5)
Bare and lexically restricted wh-questions in Hebrew (3;7 – 4;10), from FBR 2009

• **who subject**
  mi noshex et ha-xatul?
  who bites acc the-cat
  *Who bites the cat?*

• **which subject**
  eize kelev noshex et ha-xatul?
  Which dog bites acc the-cat
  *Which dog bites the cat?*

• **who object**
  et mi ha-xatul noshex?
  acc who the-cat bites
  *Whom does the cat bite?*

• **which object**
  et eize kelev ha-xatul noshex?
  acc which dog the-cat bites
  *Which dog does the cat bite?*
<table>
<thead>
<tr>
<th></th>
<th>Who subject</th>
<th>Which subject</th>
<th>Who object</th>
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<tbody>
<tr>
<td>3;7-4;5</td>
<td>80%</td>
<td>75%</td>
<td>72%</td>
<td>57%</td>
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<tr>
<td>4;6-4;10</td>
<td>84%</td>
<td>84%</td>
<td>81%</td>
<td>58%</td>
</tr>
<tr>
<td>Total</td>
<td>81%</td>
<td>78%</td>
<td>75%</td>
<td>58%</td>
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No. of participants of 22 who performed above chance

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<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Group-level above chance?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 6. The comprehension of *who* and *which* subject and object questions
RM and bare and restricted wh-questions

Bare wh object questions:

Who the cat bites ___
+Q +N ok

Which N object questions:

Which dog the cat bites ___
+Q+N +N *
Problem 1: a discrepancy between adults and children with headed object relatives and lexically restricted object wh-questions

Headed object relatives and lexically restricted wh-questions are problematic for young children, but adults fully accept them and interpret them correctly:

(1) Show me the elephant that the lion is washing ____

+R+N +N

(2) Which elephant is the lion washing ____?

+Q+N +N
Problem 1- A solution: the same gradation of featural distinctness between positions with different cut-off points for children and adults.

Identity, inclusion and disjunction in the featural constitution of X and Z are naturally ranked in a scale of distinctness:

- **Disjunction**: X is distinct from Z and Z is distinct from X
- **Inclusion**: X is distinct from Z
- **Identity**: X is non-distinct from Z and Z is non-distinct from X

Children and adult systems assume different cut-off points in the scale of distinctness, in a system which is otherwise uniform.
Problem 2: a discrepancy in the adult systems between extractions from Weak Islands and headed object relatives and lexically restricted object wh-questions.

Extractions from weak islands are perceived as degraded by adults, whereas headed object relatives and lexically restricted wh-questions crossing a lexically restricted subject are fully acceptable; but both manifest an inclusion configuration:

(1) ?? **Which book** do you wonder **who** could buy ___?
    +Q+N                                     +Q

(2) **Which book** did **the professor** buy ___?
    +Q+N                                     +N
Problem 2 – A solution: features are organized in a hierarchy

(1) ?? **Which book** do you wonder **who** could buy ___?

+Q+N +Q

(2) **Which book** did **the professor** buy ____?

+Q+N +N

In (1) the overlapping feature is +Q, the criterial feature (Rizzi 1997, etc.) characterizing questions and attracting wh-movement.

In (2) the overlapping feature is the non-criterial +N feature, which does not attracts movement alone, but does so in tandem with the criterial feature, finely modulating the exact landing site in the LP.
A solution: merging the distinctness hierarchy and the feature hierarchy

We can revise the distinctness hierarchy by incorporating in it the feature hierarchy, i.e., differentiating inclusion with overlap of criterial and non-criterial features.

Children and adult systems assume different cut-off points in the scale of distinctness; moreover, the full acceptability threshold for adults cuts inclusion into two subcases: as soon as a criterial feature is shared between X and Z, degradation is perceived.
The cut-off point between disjunction and non-criterial inclusion

The cut-off point between disjunction and Non-criterial Inclusion, crucial for children, does not seem to have consequences for computational tractability or perception of well-formedness in adults:

Disjunction

Non-Criterial Inclusion

Full Acceptability threshold

Criterial Inclusion

Identity

Nevertheless, psycholinguistic evidence shows that Non-criterial Inclusion is more complex than Disjunction for adults as well (as shown by slower reading time), even if it has no impact on acceptability: complexity and degraded acceptability are related but distinct notions.
Figure 1. Results of Experiment 1. The mean reading time by word (with 95% confidence intervals) is shown for sentences with subject-extracted and object-extracted relative clauses. The sample sentences show the alignment of reading times with words in the sentence.
Figure 2. Results of Experiment 2. The mean reading time by word (with 95% confidence intervals) is shown for sentences with subject-extracted and object-extracted relative clauses with descriptions and with pronouns. The sample sentences show the alignment of reading times with words in the sentence.
Identity, inclusion and disjunction in the featural constitution of X and Z seem to play a role in locality. What about the remaining set-theoretic relation, intersection? It is naturally ranked in the scale of distinctness between disjunction and inclusion:

- **Disjunction**: X is distinct from Z and Z is distinct from X (fully)
- **Intersection**: X is distinct from Z and Z is distinct from X (partially)
- **Inclusion**: X is distinct from Z
- **Identity**: X is non-distinct from Z and Z is non-distinct from X

Q: does disjunction play an observable role the calculation of locality?
The relevance of intersection: object relatives with gender match/mismatch in the acquisition of Hebrew


SR same gender:
Tare li et ha-isha she-mecayeret et ha-yalda.
Show to-me acc the-woman(fem) that-draws-fem acc the-girl(fem)

SR different gender:
Tare li et ha-rofe she-mecayer et ha-yalda.
Show to-me acc the-doctor(masc) that-draws-masc acc the-girl(fem)

OR same gender:
Tare li et ha-yalda she-ha-isha mecayeret.
Show to-me acc the-girl(fem) that-the-woman(fem) draws-fem

OR different gender:
Tare li et ha-yalda she-ha-rofe mecayer.
Show to-me acc the-girl(fem) that-the-doctor(masc) draws-masc

31 children aged 3;9-5;5 (M = 4;7, SD = 0;5)
Improvement of OR with gender mismatch in the acquisition of Hebrew (but not in the acquisition of Italian)


<table>
<thead>
<tr>
<th>HEBREW</th>
<th>Subject relative same gender</th>
<th>Subject relative different gender</th>
<th>Object relative same gender</th>
<th>Object relative different gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>85%</td>
<td>89%</td>
<td>67%</td>
<td>81%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITALIAN</th>
<th>Subject relative same gender</th>
<th>Subject relative different gender</th>
<th>Object relative same gender</th>
<th>Object relative different gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>82%</td>
<td>86%</td>
<td>52%</td>
<td>57%</td>
</tr>
</tbody>
</table>
Gender mismatch turns an **inclusion** configuration into an **intersection** configuration in Child Hebrew (but not in Child Italian)

*Tare li et ha-ylada she ha-isha mecayeret*
Show to-me acc the-girl(fem) that-the-woman(fem) **draws-fem**

\[ [+R, +N, +fem] \quad [+N, +fem] \]

*Tare li et ha-yalda she ha-rofe mecayer*
Show to-me acc the-girl(fem) that-the-doctor(masc) **draws-masc**

\[ [+R, +N, +fem] \quad [+N, +masc] \]
Gender (mis)match in Hebrew and Italian
(Belletti, Friedmann, Brunato, Rizzi, 2012 Lingua)

Inflected verbs agree in gender with the subject in Modern Hebrew, but not in Italian:

HEBREW
(1) Ha-isha mecayeret et ha-yalda.
‘The woman draws(FEM) the girl.’

(2) Ha-rofe mecayer et ha-yalda.
‘The-doctor draws(MASC) the girl’

ITALIAN
(3) Il dottore/la donna disegna la bambina
‘The doctor/the woman draws the girl.’

So, gender is part of the Phi set attracting the subject in Hebrew, but not in Italian
Why does gender mismatch substantially improve comprehension in Child Hebrew, but not in Child Italian?

Gender is marked in an equally explicit and salient way in DP’s in Hebrew and Italian.

But gender is part of the Phi set attracting the subject in Hebrew but not in Italian.

If only features attracting movement are taken into account in the computation of RM, it is predicted that a gender mismatch will play a role in Hebrew, but not in Italian.
The gradation of featural distinctness revised to include intersection (in relevant features)
Number match/mismatch in OR in Romance

Number, contrary to gender, is part of the Phi set attracting the subject in Romance languages, e.g., Italian

(1) Il ragazzo part-e ‘The boy leaves’
(2) I ragazzi part-ono ‘The boys leave’

So, number should be taken into account in the calculation or RM. The prediction is that a number mismatch should give rise to an intersection relation, hence improve comprehension of OR:

(3) Mostrami i ragazzi che il dottore fotografa __
    \[ +R,+N,+Pl \quad +N, +Sing \]

In fact, Adani, van der Lely, Forgiarini, Guasti (2010) showed that a number mismatch improves the comprehension of OR in Child Italian, whereas a gender mismatch does not (on number mismatch see also Contemori and Marinis (2013) on self-paced listening).
Subject relative clause – Number match
Montre-moi le garçon qui lave le chat.
‘Show me the boy that is washing the cat.’

Subject relative clause – Number mismatch
Montre-moi les garçons qui lavent le chat.
‘Show me the boys that are washing the cat.’

Object relative clause – Number match
Montre-moi le chat que le garçon lave.
‘Show me the cat that the boy is washing.’

Object relative clause – Number mismatch
Montre-moi le chat que les garçons lavent.
‘Show me the cat that the boys are washing.’

Number match/mismatch in the acquisition of French
Anamaria Bentea (2016) Intervention effects in language acquisition The comprehension of A-bar dependencies in French and Romanian, PhD Dissertation, University of Geneva
Number mismatch vs Number match

Number mismatch determines an intersection relation

Show me the cat that the boy is washing INCLUSION
+R+N+Sing +N+Sing

Show me the cat that the boys are washing INTERSECTION
+R+N+Sing +N+Plur
Comparing the role of number vs gender mismatch: the comprehension of Top Top structures in Child Italian

Claudia Manetti, Vincenzo Moscati, Luigi Rizzi, Adriana Belleti The role of Number and Gender Features in the Comprehension of Italian Clitic Left Dislocations , BUCLD Proceedings 40, 2016

Number Mismatch Conditions (Fig. 2):
(9) a. SOclV: I cani il gatto lo mordono
   The dogs_{MASC-PL} the cat_{MASC-SING} him_{CL} bite

   b. OSclV: Il gatto i cani lo mordono
   The cat_{MASC-SING} the dogs_{MASC-PL} him_{CL} bite

Gender Mismatch Conditions (Fig.3):
(10) a. SOclV: La bambina il principe lo fotografa
   The girl_{FEM-SING} the prince_{MASC-SING} him_{CL} photographs

   b. OSclV: Il principe la bambina lo fotografa
   The prince_{MASC-SING} the girl_{FEM-SING} him_{CL} photographs
The role of number vs gender mismatch in the comprehension of Top Top structures in children
Claudia Manetti, Vincenzo Moscati, Luigi Rizzi, Adriana Belleti The role of Number and Gender Features in the Comprehension of Italian Clitic Left Dislocations, BUCLD Proceedings 40, 2016

**Top Top [ pro cl V]** structures may be disambiguated as **S O [ pro cl V]** or as **O S [pro cl V]** by either number or gender mismatch of the two DP’s.

**Number Mismatch:**
(9) S O [pro cl V]: I cani il gatto [pro lo mordono ]
   The dogs_{MASC-PL} the cat_{MASC-SING} [pro him_{CL} bite]
   +Pl              +Sing

**Gender Mismatch:**
(10) S O [pro cl V]: La bambina il principe [pro lo fotografa]
   The girl_{FEM-SING} the prince_{MASC-SING} [pro him_{CL} photographs]
   +Fem              +Masc
Results: **Top Top** disambiguated by **number** mismatch are well-understood by children; disambiguated by **gender** mismatch are at chance.

<table>
<thead>
<tr>
<th></th>
<th>GENDER MISMATCH</th>
<th>NUMBER MISMATCH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SO</td>
<td>OS</td>
<td>SO</td>
</tr>
<tr>
<td>Target</td>
<td>63</td>
<td>55</td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>56%</td>
<td>49%</td>
<td>90%</td>
</tr>
<tr>
<td>Non-target</td>
<td>49</td>
<td>57</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>44%</td>
<td>51%</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>112</td>
<td>112</td>
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</tbody>
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*glmer (accuracy ~ MISMATCH + (1|SUB) + (1|ITEM), data=dataset, family = binomial)*
Number mismatch determines an intersection relation

Show me **the cat** that **the boy** is washing  
**INCLUSION**  
+R+N+Sing  +N+Sing

Show me **the cat** that **the boys** are washing  
**INTERSECTION**  
+R+N+Sing  +N+Plur

Adani’s, Bentea’s, Manetti’s results show that in Romance a number mismatch improves comprehension in children. What about adults? Does the creation of an intersection relation have any observable impact on adults?
Any observable role of the intersection/inclusion distinction in adults?
Intersection vs inclusion in adult self-paced reading


**Relative clause with Number Match:**

(1) Jeff / parle / à la prisonnière / que / le gardien / sort / parfois / dans la cour.

   Jeff / speaks / to the prisoner-S / that / the guard-S / takes-S out / sometimes / in the yard.

**Relative clause with Number Mismatch:**

(2) Jeff / parle / aux prisonnières / que / le gardien / sort / parfois / dans la cour.

   Jeff / speaks / to the prisoners-P / that / the guard-S / takes-S out / sometimes / in the yard.

**Declarative with Number Match:**

(3) Jeff / dit / à la prisonnière / que le gardien / sort / parfois / dans la cour.

   Jeff / tells / the prisoner-S / that / the guard-S / goes-S out / sometimes / in the yard.

**Declarative with Number Mismatch:**

(4) Jeff / dit / aux prisonnières / que le gardien / sort / parfois / dans la cour.

   Jeff / tells / the prisoners-P / that / the guard-S / goes-S out / sometimes / in the yard.
Self-paced reading with number match/mismatch in relative clauses and declaratives

Adults are faster with intersection than with inclusion in reading

**Relative clause with Number Match:**  INCLUSION

(1) Jeff / parle / à la prisonnière / que / le gardien / sort / parfois / dans la cour.

   Jeff / speaks / to the prisoner-S / that / the guard-S / takes-S out / sometimes / in the yard.

     +R+N+Sing          +N+Sing

**Relative clause with Number Mismatch:**  INTERSECTION

(2) Jeff / parle / aux prisonnières / que / le gardien / sort / parfois / dans la cour.

   Jeff / speaks / to the prisoners-P / that / the guard-S / takes-S out / sometimes / in the yard.

     +R+N+Plur          +N+Sing

**Conclusion:** the distinction between Intersection and Inclusion, critical for children, has consequences observable also in adult performance.
Intervention effects in acquisition: grammar-based or extra-grammatical?

• We have offered an interpretation of various intervention effects in acquisition in grammar-based terms, as directly deriving from a grammatical principle of locality, RM.

• Alternatively, one could entertain the hypothesis that such effects are extra-grammatical: for instance, it could be that the child, confronted with the task of assigning theta roles in the comprehension of complex configurations such as object A’-dependencies fails because his/her parsing capacities are affected by general memory limitations, in ways which are largely grammar-independent.

• Three arguments for a grammar-based approach.
Argument 1: parallel effects in comprehension and production

• Object relatives are systematically avoided by children in different kinds of elicited production tasks, whereas subject relatives are systematically produced (Friedmann, Belletti, Rizzi 2009, Belletti & Con temori 2011, and, for corpus studies, Hamann & Tuller 2015, Belletti & Chesi 2011).

• This shows that the problem with object A’-dependencies is not just a comprehension problem.

• The parallel involvement of comprehension and production supports the view that the grammatical system, underlying both production and comprehension, is involved.
Argument 2: The effects are structurally selective

Relative clauses in Mandarin Chinese (SVO, with head-final relatives):

(1) a. [i hua laoshi de] xiaopenyoui
   draw teacher DE child
   “the child that draws the teacher”

b. [laoshi hua _i de] xiaopenyoui
   teacher draw DE child
   “the child that the teacher draws”

So the case nicely disentangles hierarchical intervention from linear intervention: hierarchically, the subject intervenes between the object trace and the relative head, much as in languages with head-initial relatives; linearly, the subject does not intervene between the object trace and the relative head.

A grammar based approach expects hierarchical intervention to be relevant (as in all grammar related phenomena), hence an advantage for Subject Relatives over Object Relatives is predicted.

An approach based on parsing of the surface string would predict an OR advantage because, given the WO properties of the language, in OR the subject does not linearly intervene between the object trace and the relative head, whereas in SR the object linearly intervenes between the subject trace and the relative head.
Structural/Hierarchical Intervention in Child Mandarin Chinese relatives

OR:
xiaomao da ___ de xiaougou
cat hit ___ De dog
The dog that the cat hit ___

SR:
___ da xiaomao de xiaougou
___ hit cat De dog
The dog that ___ hit the cat

Prediction of a linear intervention approach: OR > SR

Prediction of a hierarchical intervention approach: SR > OR
Hu et al 2016 show that subject relatives are significantly easier to understand (e.g., at age 5, 72% SR correctly understood, vs 20% OR; at age 7, 99% SR correctly understood vs 44% OR).

This supports the view that intervention is calculated hierarchically, as predicted by a grammar-based approach, and not linearly. The authors explicitly compare RM and Gibson’s (1998, 2000) Dependency Locality Theory.

Hu et al 2015 show that the SR advantage is also found in elicited production in the acquisition of Mandarin Chinese.
Argument 3: The effects are featurally selective

• An approach based on RM leads one to expect that only certain features characterizing X and Z are relevant for the computation of locality.

• As we are looking at locality on movement chains, the expectation is that only morphosyntactic features involved in the triggering of movement are taken into account.

• An extra-grammatical approach does not immediately lead to predicting such a selectivity.

• The different role of gender mismatch in Hebrew and Romance, as well as the contrast between gender and number in Romance, show that the effect is selective, thus giving support to a grammar-based approach.
THANK YOU!