Acceptability, Decision-making, and Parsing

Seminar 4: Agreement and other illusions of grammaticality

Labex-EFL
Seminar four, 11 Juin 2019
Brian Dillon
The seminars

Seminar four (today):

- Continuation of agreement in the 2AFC paradigm from last class: focus on Hindi S-V agreement
- Broaden discussion into grammaticality illusions more generally: focus on European French quantification à long distance
From last time

→ Agreement attraction effects in English and Slavic languages show a mixed profile. There appears to be a role both for uncertainty in the encoding of morphosyntactic number, and retrieval error that arises during the process of identifying a controller.

→ Evidence for encoding error: longer decision RTs, errors in grammatical sentences.

→ Evidence for retrieval error: greater error rate in ungrammatical sentences (e.g. the grammaticality asymmetry).

→ Remaining open questions: what’s the relative role of retrieval and encoding errors in agreement attraction? Are these roles the same or different across different languages?
Are Hindi speakers susceptible to agreement attraction effects in a way similar to English/Spanish/Russian/… speakers?

Sakshi Bhatia, UMass
Subject versus object agreement

- In languages with both object and subject agreement, both subj types are susceptible to attraction:

<table>
<thead>
<tr>
<th>Preamble to be produced</th>
<th>…verb + expected AUX.</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Arztain batek mendizale hori    …ikusi DU</td>
<td>(SOV, S_{SG-O_{SG}})</td>
<td></td>
</tr>
<tr>
<td>2. Mendizale hori artzain batek     …ikusi DU</td>
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<td></td>
</tr>
<tr>
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<tr>
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<td></td>
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<tr>
<td>5. Hiru artzainek mendizale hori      …ikusi DUTE</td>
<td>(SOV, S_{PL-O_{SG}})</td>
<td></td>
</tr>
<tr>
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<td>(OSV, S_{PL-O_{SG}})</td>
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<td>“The three shepherds have seen that mountaineer”</td>
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<tr>
<th>Agreement errors</th>
<th>SOV</th>
<th>OSV</th>
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<tr>
<td><strong>Subject agreement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number match (S_{SG-O_{SG}})</td>
<td>1 (0.3%) [0]</td>
<td>2 (0.6%) [1]</td>
</tr>
<tr>
<td>Number mismatch (S_{SG-O_{PL}})</td>
<td>7 (2.0%) [2]</td>
<td>22 (6.3%) [7]</td>
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<td><strong>Object agreement</strong></td>
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<td>1 (0.3%) [1]</td>
<td>40 (11.1%) [32]</td>
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Santesteban et al (2013); E2
Subject versus object agreement

- Similar effects are seen with object agreement with participles in French:

La danseuse que le serveur / la serveuse a surprise

- In conditions where both NPs matched in gender, accuracy in a production task was overall high for masculine objects (perhaps owing to default form) and a bit lower for feminine objects (approximately 75%).
- When the subject mismatched in features there was approximately 15-25% more errors in participial selection.
Raam bhaag gayaa
Raam.M.SG run go.PERF.M.SG
“Raam ran away.”
Hindi agreement

Raam bhaag gayaa
Raam.M.SG run go.PERF.M.SG
“Raam ran away.”

Raam kai chuuhe  pakaR rahaa thaa
“Raam was catching many mice.”
Raam bhaag gayaa
Raam.M.SG run go.PERF.M.SG
“Raam ran away.”

Raam kai chuuhe  pakaR rahaa thaa
“Raam was catching many mice.”

Raam-ne kai chuuhe  pakaRe the
“Raam had caught many mice.”
“Mixed Agreement”

Raam kai chuuhe  pakaR rahaa thaa
“Raam was catching many mice.”

Raam-ne kai chuuhe  pakaRe the
“Raam had caught many mice.”

**HINDI AGREEMENT GENERALIZATION:** Agree with the most syntactically prominent, non-case marked DP (but cf. Bhatia, 2019).

→ In non-perfect clauses, subject is unmarked, and thus controls agreement.
→ In perfect clauses, subject takes ergative case; if object is unmarked, then the object controls agreement. If the object is marked, then ‘default agreement’ occurs (=3SG.MASC).
“Mixed Agreement”

Raam\([+\text{SG},+\text{M}]\) kai chuuhe\([+\text{PL},+\text{M}]\) paka\text{R} raha\([+\text{SG},+\text{M}]\) thaa\([+\text{SG},+\text{M}]\)
Raam many mice catch PROG.M.SG WAS.M.SG
“Raam was catching many mice.”

Raam-\text{ne}[+\text{SG},+\text{M}] kai chuuhe\([+\text{PL},+\text{M}]\) paka\text{R}e\([+\text{PL},+\text{M}]\) the\([+\text{SG},+\text{M}]\)
Raam-\text{ERG} many mice catch WAS.M.PL
“Raam had caught many mice.”

→ Attraction occurs in languages with both subject and object agreement (e.g. Basque; Santesteban et al., 2013).

→ Hindi is importantly different from these languages: there is no ‘fixed object/subject’ agreement slot on the verb. Instead, the argument that controls the sole agreement slot on the verb varies by context / case-marking.
Formal similarity

- Provides a good explanation for the finding that nouns that look more like subjects tend to interfere more with agreement.
- In German and Dutch, unambiguous accusative case marking reduces attraction (but cf. Avetisyan et al. in Armenian).
- In Slovak and Russian, greater interference seen for attractors that are syncretic with nominative forms (Badecker & Kuminiaik, 2007), even when those forms are not formally plural! (Slioussar, 2018)
What is the role of retrieval errors in Hindi agreement processing?

→ Overall, we expect to see agreement attraction in Hindi: possibly reflecting retrieval errors or encoding errors.
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→ For OBJECT AGREEMENT, we should see more attraction from objects than subjects, because subjects are more similar to target of retrieval than objects. (E2)

→ For both, we expect more attraction from non-case marked NPs than case-marked NPs, because case-marked NPs can never control agreement. (E3)
SUBJECT AGREEMENT (E1)

→ OBJECT DISTRACTOR CONDITIONS
Vo billi$_{[+SG,+F]}$ jisne ek chuushiya$_{[+F,+SG]}$ DhuunDh nikaali thii bhaag gayii that cat that-ERG many mice find remove.F.SG WAS.F.SG run go.F.SG “The cat that had found a mouse ran away.”

Vo billi$_{[+SG,+F]}$ jisne kai chuuhe$_{[+PL,+M]}$ DhuunDh nikaale the bhaag gayii that cat that-ERG many mice find remove.M.PL WAS.M.PL run go.F.SG “The cat that had found many mice ran away.”

→ SUBJECT DISTRACTOR CONDITIONS
Vo billi$_{[+SG,+F]}$ jise ek chuushiya$_{[+F,+SG]}$ dekh rahii thii bhaag gayii that cat that-ACC many mice saw PROG.F.SG WAS.F.SG run go.F.SG “The cat that a mouse had been staring at ran away.”

Vo billi$_{[+SG,+F]}$ jise kai chuuhe$_{[+PL,+M]}$ dekh rahe the bhaag gayii that cat that-ACC many mice saw PROG.M.PL WAS.M.PL run go.F.SG “The cat that many mice had been staring at ran away.”
OBJECT AGREEMENT (E2)

→ OBJECT DISTRACTORS CONDITIONS
Mira-ne ...
... vo billi\([+\text{SG},+\text{F}]\) jisne ek chuuh\(i\)ya\([+\text{F},+\text{SG}]\) DhuunDh nikaalii thii paka\(\text{R}\) lii that cat that-ERG many mice find remove.\(\text{F.SG}\) WAS.\(\text{F.SG}\) catch took.\(\text{F.SG}\)
"Mira caught the cat that had found a mouse."
... vo billi\([+\text{SG},+\text{F}]\) jisne kai chuuh\(\text{e}\)\([+\text{PL},+\text{M}]\) DhuunDh nikaale the paka\(\text{R}\) lii that cat that-ERG many mice find remove.\(\text{M.PL}\) WAS.\(\text{M.PL}\) catch took.\(\text{F.SG}\)
"Mira caught the cat that had found many mice."

→ SUBJECT DISTRACTORS CONDITIONS
... vo billi\([+\text{SG},+\text{F}]\) jise ek chuuh\(i\)ya\([+\text{F},+\text{SG}]\) dekh rahii thii bhaag paka\(\text{R}\) lii that cat that-ACC many mice saw PROG.\(\text{F.SG}\) WAS.\(\text{F.SG}\) catch took.\(\text{F.SG}\)
"Mira caught the cat that a mouse had been staring at."
... vo billi\([+\text{SG},+\text{F}]\) jise kai chuuh\(\text{e}\)\([+\text{PL},+\text{M}]\) dekh rahe the bhaag paka\(\text{R}\) lii that cat that-ACC many mice saw PROG.\(\text{M.PL}\) WAS.\(\text{M.PL}\) catch took.\(\text{F.SG}\)
"Mira caught the cat that many mice had been staring at."
SUBJECT AGREEMENT+CASE (E3)

→ NO CASE MARKING (-ko)
Vo billi\([+\text{SG},+\text{F}]\) jo ek chuuhiya\([+\text{F},+\text{SG}]\) dekh rahii thii bhaag gayii that cat that many mice saw PROG.F.SG WAS.F.SG run go.F.SG “The cat that had been staring at a mouse ran away.”
Vo billi\([+\text{SG},+\text{F}]\) jo kai chuuhe\([+\text{PL},+\text{M}]\) dekh rahii thii bhaag gayii that cat that many mice saw PROG.F.SG WAS.F.SG run go.F.SG “The cat that had been staring at many mice ran away.”

→ YES CASE MARKING (+ko)
Vo billi\([+\text{SG},+\text{F}]\) jo ek chuuhiya-ko\([+\text{F},+\text{SG}]\) dekh rahii thii bhaag gayii that cat that many mice-ACC saw PROG.F.SG WAS.F.SG run go.F.SG “The cat that had been staring at the/a certain mouse ran away.”
Vo billi\([+\text{SG},+\text{F}]\) jo kai chuuhoN-ko\([+\text{PL},+\text{M}]\) dekh rahii thii bhaag gayii that cat that many mice-ACC saw PROG.F.SG WAS.F.SG run go.F.SG “The cat that had been staring at many mice ran away.”
The task: 2AFC continuation

Choose appropriate continuation (for option on left, press F; for option on right, press J)
Timeout=3 s

Inter stimulus interval (Blank): 50 ms
Word display time: 375 ms
Fixation Cross (Press any key to start)

The task: 2AFC continuation

Mira-ne vo billi_{[+SG,+F]} jisne kai chuuhe_{[+PL,+M]} DhuunDh nikaale the pakaR...

\[
\text{correct} \quad \rightarrow \quad \text{lii} \quad \text{incorrect}\]

\[
\text{liye} \quad \rightarrow
\]

\(N_{\text{subj}} = \{59,60,58\} \) per experiment (exclusions from post-experiment questionnaire to test Hindi fluency/dialect)
\(N_{\text{item}} = 36 \) per experiment
RT and response measured at critical choice point
Half items had [+F,+SG] target, other half had [+M,+SG] target.
Distractor always mismatched in two features: [+M,+PL] or [+F,+PL]**
Animacy of target/distractor counterbalanced across items
All items normed for plausibility
SUBJECT AGREEMENT

OBJECT AGREEMENT

NON-PERFECT SRCs
Drift diffusion model:
As in Staub (2009), increase error rates generally saw an increase in RTs.
Object agreement (red) was overall slower than subject agreement.
Quantile-quantile plots of match versus mismatch suggest linear relationship: shape of the RT distribution is largely the same across match and mismatch conditions.
2AFC agreement choice task consistently shows the distributional footprint of a diffusion process (see also Keung & Staub, 2018), implying a role for encoding uncertainty in agreement errors solicited in this paradigm.
Bayesian maximal mixed effects logistic regression, fit using \textit{brms}. Plots show posterior estimate of effect of distractor feature mismatch.
more agreement errors with number mismatched distractor
longer RTs to correct responses
Number-mismatched distractors interfered with verb choice selection in both E1 (subject agreement) and E2 (object agreement):

- **LONGER RTS**
- **INCREASED P(ERROR)**
- **ANECDOTAL EVIDENCE FOR MORE INTERFERENCE IN OBJECT AGREEMENT**

No evidence that grammatical role modulates this effect.

- **NO EVIDENCE FOR CUE-BASED RETRIEVAL OF AGREEMENT CONTROLLER**
No evidence for interference in either measure in non-perfect (NPF) relative clause constructions.

$\rightarrow$ NO EVIDENCE THAT OVERT CASE PER SE INFLUENCES THE ATTRACTION EFFECT.
Provisional generalization:

- Less interference

vo billi jo kai chuha dekh rahii thii bhaag ...
that cat that was seeing many mice ran ...

vo billi jisne kai chuha dekh rahe the bhaag ...
that cat that had seen many mice ran ...

Mira-ne vo billi jise kai chuha dekh rahe the pakaR ...
Mira caught that cat that many mice were seeing ...

More interference
Provisional generalization:

vo billi jo kai chuhe dekh rahii thii bhaag ...
that cat that was seeing many mice ran ...

vo billi jisne kai chuuhhe dekh rahe the bhaag ...
that cat that had seen many mice ran ...
Mira-ne vo billi jise kai chuuhhe dekh rahe the pakaR ...
Mira caught that cat that many mice were seeing ...

→ Retrieval interference? But: no effect of grammatical role or case marking.
→ Agreement type? But: subject and object agreement both susceptible to attraction.
→ RC type? But: distractors in ORCs and SRCs alike caused interference to similar degree.
Provisional generalization:

→ Interference seems to occur when the distractor noun independently controls agreement elsewhere. **Merely having a recent plural noun did not clearly trigger attraction in Hindi.**

→ It is the features of the most recent *verb* that interfered in our Hindi experiments, not recent unmarked or subject-like nouns.

→ Could reflect form-to-form priming of morphological forms (Haskell et al., 2010; Lorimor et al., 2018). But this seems perhaps implausible with the size of an effect, and has only been observed (to date) in cases where speakers show variable agreement patterns.
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A proposal:

1) Hindi structural generation proceeds predictively left to right (left corner parsing), and involves actively elaborating VP phrase (Vasishth & Lewis, 2006)
2) When agreement controllers are identified in left to right processing, they pass their features to a predicted VP (TP).
3) When there are multiple active VP (TP) encodings with conflicting features, encoding interference arises.
Vasishth & Lewis (2006) provide evidence that Hindi shows *anti-locality effects*: adding dependents to a VP speeds processing of the head of the VP when it is (finally) encountered at the right edge of the phrase.

Nevins et al (2007) showed that Hindi speakers show an ‘all-or-none’ error pattern in ERP measures: P600 effects did not scale with the number of agreement feature violations.

Consistent with the claim that Hindi speakers develop sharp expectations about the form and position of the clause-final verbal complex; more broadly, consistent with emerging view that highlights a central role for predictive/anticipatory processing in language comprehension.
vo billi ... 
वो बिल्ली ... 
that cat ...
vo billi jise kai chuhe ... 
वो बिल्ली जिसे कई चूहे ... 
that cat whom many mice ...
vo billi jise kai chuhe   ...
वो बिल्ली जिसे कई चूहे   ...
that cat whom many mice   ...

similarity-based interference → feature overwriting/migration
vo billi jise kai chuhe dekh rahe the bhaag …
वो बिल्ली जिसे कई चूहे देख रहे थे भाग …
that cat whom many mice saw ran …

See also Smith et al. (2018), Avetisyan et al. (2019)
vo billi       ...
वो बिल्ली       ...
that cat       ...

S
   / 
 NP[+SG,+F] VP[+SG,+F]
   /     |
vo billi   ...

...
vo billi jo kai chuhe   ...
दो बिल्ली जो कई चूहे   ...
that cat who many mice   ...

vo billi jo kai chuhe   ...
वो बिल्ली जो कई चूहे   ...
that cat who many mice   ...

v obilli jo kai chuh
that cat who many mice
vo billi jo kai chuhe  ...  
वो बिल्ली जो कई चूहे  ...  
that cat who many mice  ...  

VPs share features → no (detectable) feature migration
vo billi jo kai chuhe dekh rahii thii bhaag ... 
that cat who saw many mice ran ...

See also Smith et al. (2018), Avetisyan et al. (2019)
→ Broadly consistent with control-based approaches to agreement production, which involve structural copying of features from agreement controller onto agreement target (Bock & Middleton, 2011)

→ The timing of this copying process in Hindi, along with head-final structure, could be the source of the different attraction profile.
Interim summary

→ **Hindi shows agreement attraction** in 2AFC task, but in (apparently) more limited contexts than other languages studied. Provisional generalization: intervening agreement dependencies cause agreement errors, not intervening nouns.

→ **Reaction time** is again slower when correct choice is made, reflecting uncertainty about true agreement value.
The experiments: Open questions

→ What makes Hindi more resistant to attraction?
  - Mixed agreement system
  - SOV word order (Mertzen et al., 2016; but c.f. Lago et al., 2018)
  - Main effect of construction (Linzen & Leonard, 2018)

→ How to distinguish ‘predictive VP computation’ from other hypotheses?
  - Look for effect in other tasks without RSVP
  - Look for interference effects at embedded verb
  - Test non-agreeing verb in embedded clause
Stepping back

→ In the studies we saw, there seem to be clear cross-linguistic differences in where and when see attraction; these need to be further explored.

→ What is consistent is that RTs and errors travel together in experimental manipulations of agreement production. Broadly speaking, these models suggest that it is critical to modeling the uncertainty / competition behind agreement production.

→ Sequential sampling models may be one fruitful formal tool to do so: they provide a well-worked out linking hypothesis between encoding and decision processes.
The Question:
What is the relationship between grammatical knowledge and linguistic behavior?

One answer:
They reflect the same (cognitive) system. Grammatical knowledge is only ever used in or comprehension/production. There is no store of separate grammatical knowledge that may be accessed outside of ‘linguistic performance’ (i.e. comprehension + production), but properties of the performance system lead to systematic, predictable errors.

(Lewis & Phillips, 2014; Neeleman & van de Koot, 2010; Phillips, 1996; Phillips & Lewis, 2012)
Active filler-gap processing is suspended inside of island environments (Bourdages, 1992, McElree & Griffith, 1998; Phillips, 2006; Stowe, 1986; Traxler & Pickering, 1996; a.o.)

Comprehenders do not violate Principle C in finding a cataphoric pronoun’s antecedent (Cowart & Cairns, 1987; Kazanina et al., 2006; Kazanina & Phillips, 2010; Van Gompel & Liversedge, 2003.)

Comprehenders do not violate Principle A in finding a reflexive’s antecedent (Nicol & Swinney, 1989; Sturt, 2003; among many others)

The librarians heard that the schoolboys embarrassed themselves
Grammatical Illusion:
Failure to completely apply grammatical knowledge to constrain parsing processes, leading to spurious (but perhaps fleeting) percepts of acceptability/well-formedness

Phillips, Wagers & Lau, 2011
The key to the cabinets are ...

Badecker & Kuminiak (2007); Dillon et al., (2013); Wagers, 2008; Wagers, Lau & Phillips (2009)
The bills [that no Democratic senators supported] will ever become law

Vasishth et al., 2008
LICENCED NPI: No bills that the Democratic senators supported will ever become law.

Drenhaus et al., 2004; Parker & Phillips, 2018; Vasishth et al., 2008; Xiang et al., 2009;
UNLICENSED NPI: The bills that the Democratic senators supported will ever become law.

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ILLUSORILY LICENSED NPI: The bills that no Democratic senators supported will ever become law.

Drenhaus et al., 2004; Parker & Phillips, 2018; Vasishth et al., 2008; Xiang et al., 2009;
Parker & Phillips (2016)

Table 3
Sample set of items for Experiment 6.

<table>
<thead>
<tr>
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<th>As the editors mentioned, no authors [that the critics recommended for the assignment] have ever received a pay raise.</th>
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The illusion is ameliorated with increased linear / temporal distance between NPI and illusory quantifier.
Vasishth et al. (2008)

*No pirate that had a beard was ever happy.*

Kein Pirat ... einen ... jemals ...

- + negative
- + c-commander

*Ein Pirat ... keinen ... jemals ...

- + c-commander
- + negative
- + c-commander

*A pirate that had no beard was ever happy.*

*A pirate that had a beard was ever happy.*
Is French quantification à long distance susceptible to illusory licensing effects?
J’ai lu... un livre. ‘a book’
I read le livre. ‘the book’
les livres. ‘the books’
des livres. ‘some books’
*livres. ‘books’
*de livres. ‘books’
J’ai lu beaucoup de livres. ‘many books’
I read pas mal de livres. ‘a bunch of books’
suffisamment de livres. ‘enough books’
trop de livres. ‘too many books’
énormément de livres. ‘a ton of books’
de plus en plus de livres. ‘more and more books’
J’ai beaucoup lu de livres
lit. I have many read of books

Quantification at a distance (QAD) is allowed...

Authier, 2016; Burnett, 2009; Kayne, 1975; i.a.
... but c-command is required ...

*L’homme qui a beaucoup lu a de livres
lit. *The man that read a lot has of books.
... and double quantification is not allowed.

*Beaucoup de gens ont lu de livres

lit. Many people read of books
IS de-PHRASE LICENSING FALLIBLE?

GRAMMatical

J’ai envoyé à beaucoup de gens des invitations pour mon anniversaire.
‘I sent to many people invitations for my birthday.’

UNGRAMMatical

*J’ai envoyé a des gens d’invitations pour mon anniversaire.
‘I sent to people invitations for my birthday.’
IS de-PHRASE LICENSING FALLIBLE?

GRAMMATICAL

J’ai envoyé à beaucoup de gens des invitations pour mon anniversaire.

ILLUSORY

*J’ai envoyé à beaucoup de gens d’invitations pour mon anniversaire.

UNGRAMMATICAL

*J’ai envoyé à de gens d’invitations pour mon anniversaire.
J'ai donné à beaucoup de gens...?
J’ai envoyé à beaucoup de gens des invitations pour mon anniversaire.

*J’ai envoyé à des gens d’invitations pour mon anniversaire.
*J’ai envoyé à beaucoup de gens d’invitations pour mon anniversaire.*
J’ai lu beaucoup de livres
lit. I have read many of books

J’ai beaucoup lu de livres
lit. I have many read of books

+QAD: beaucoup, trop, suffisamment, énormément, de plus en plus, pas mal
Stepping back

→ French quantification at a distance constructions seem to be susceptible to illusory licensing, just as with English/German/ negative polarity items.

→ One analysis: memory retrieval is required to reactivate quantifiers that bind dependent elements, and that retrieval is prone to interference*

J’ai envoyé à beaucoup de gens d’invitations pour mon anniversaire.

The bills that no senators supported will ever become law.

→ On this view, memory constraints lead to illusory licensing in both languages. One question, though, is how ‘surface-oriented’ this retrieval is. Do all quantifiers interfere?

→ For English NPI illusions, Xiang et al (2006, 2009) reported similar effects for no, very few, and only two/three/four … . What about French quantification at a distance?

*(but cf. Kush et al., 2015)
NOT ALL QUANTIFIERS FLOAT

J’ai lu plein de livres
lit. I have read tons of books

*J’ai plein lu de livres
lit. I have tons read of books
Properties of *beaucoup* and *plein* type quantifiers

<table>
<thead>
<tr>
<th>Property</th>
<th>beaucoup</th>
<th>plein</th>
</tr>
</thead>
<tbody>
<tr>
<td>quantify at a distance</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>can be used as an adverb</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>can be used as an object pronoun</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

- François a lu beaucoup / *plein* de livres
- François a beaucoup / *plein* lu de livres
- François a beaucoup / *plein* lu.
- François a fait beaucoup / *plein*.
- François a beaucoup / *plein* fait.

-QAD: *plein*, *nombre*, *quantité*
QAD adverb quantifier generalization: quantifiers that can independently act as quantifiers can participate in QAD (compare *j'ai plein dormi; Kayne (1975)).

There are different accounts of how this syntactic difference translates in ability to participate in QAD: adverbs may be base-generated as VP adjuncts (e.g. Burnett, 2009, inter alia), or derived via movement of an AdvP (e.g. Authier, 2016).

On either account, there is a difference in the categorical structure of the two quantifiers that translates into their ability to quantify at a distance.
J'ai envoyé à beaucoup de gens d'invitations pour mon anniversaire.

*J'ai envoyé à plein de gens d'invitations pour mon anniversaire.
J’ai envoyé à beaucoup/plein de gens **des invitations** pour mon anniversaire.

*J’ai envoyé à des gens **d’invitations** pour mon anniversaire.*
*J’ai envoyé à beaucoup de gens d’invitations pour mon anniversaire.

*J’ai envoyé à plein de gens d’invitations pour mon anniversaire.
Going further:

→ Additional contrasts tested:

- Beaucoup de gens ont lu de livres.
- Plein de gens on lu de livres.

→ Across all experiments, we find that beaucoup type quantifiers create illusions of grammaticality, but not plein type.

→ Is there any evidence that bears on the interpretation? Comprehenders aren’t always that great at sorting out quantificational force (Frazier & Clifton, 2011)

Many students often turn in their assignments late.
Beaucoup de familles ont donné des livres à la bibliothèque de l’école pendant leur nettoyage de printemps.

D'après ce que vous avez compris de l'énoncé de Marie: `According to your interpretation of what Marie said:'

A. Chaque famille a donné au moins un livre. `Each family donated at least one book.'
B. Chaque famille a donné une grande quantité de livres. `Each family donated a great quantity of books.'
Lewis & Vasishth (2005)’s model claims that parsing consists of:

- coding a syntactic phrase marker in memory as a set of memory chunks: encodings that consist of a bundle of feature-value pairs.
- creating syntactic dependencies during comprehension consists in using features to activate the information in working memory necessary to integrate/parse the current input.

Lewis & Vasishth, 2005
→ Retrieval serves the role of identifying an XP in working memory that can quantify the de-Phrase.
→ In standard QAD structures, this amounts to finding a c-commanding adverbial that can bind the bare de-NP.
Illusory de-NP licensing arises as a consequence of the partial feature match. Beaucoup-type, but not plein-type quantifiers, bear the correct syntactic features. It is only a partial match to the retrieval cues, so it cannot be reliably reactivated. It creates only an illusion of grammaticality: a sense that it seems somewhat acceptable, but which fails to generate a coherent interpretation.
Stepping back

- NPI licensing and quantification at a distance show ‘illusory licensing’ or ‘grammaticality illusion’ effects that parallel the agreement attraction effects.

- Both types of effects receive a unified explanation from the point of view of cue-based parsing models as retrieval errors: when the parser attempts to establish a dependency between two elements, it may activate grammatically inaccessible elements and partially license dependent elements.
Agreement vs. Illusory quantification

→ There remain important unexplained differences: surface form matters a lot for agreement (consider the case syncretism effects in Slovak / Russian / Croatian).

→ Surface form doesn’t seem to matter much for quantification illusions: in French you must be the right category of quantifier, and in English, negation alone is not sufficient to cause illusory NPI effects (Mueller & Phillips, in press).

→ Similarly, surface similarity in terms of case attraction doesn’t seem to be enough to control where we do and don’t see attraction errors in Hindi.
The Question:

How tight is the relationship between grammatical knowledge (competence) and sentence comprehension?

Grammatical sophistication in comprehension suggests a very tight relationship between grammatical knowledge and linguistic behavior.
The Question:

How tight is the relationship between grammatical knowledge (competence) and sentence comprehension?

- The properties of the processing architecture (e.g. constraints on memory) create predictable grammatical illusions (agreement errors, NPI illusions, quantification at a distance).
THANK YOU FOR LISTENING!

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