

Discourse conditions on Verb Phrase Ellipsis

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Two approaches to ellipsis

- 1 Identity-based approaches:
Ellipsis requires an identical antecedent in the linguistic context (at some syntactic and/or semantic level or representation); H&S's 'surface anaphora'
Cf., e.g., Merchant 2001, Merchant 2013
- 2 Recoverability-based anaphoric approaches:
Ellipsis is an ordinary anaphoric mechanism and requires that an appropriate antecedent be recoverable from the discourse context (linguistic and extralinguistic); H&S's 'deep anaphora'
Cf., e.g., Hardt 1993

Identity based approaches: VPE as a Surface Anaphor

VPE requires a syntactically identical antecedent
(Hankamer and Sag 1976; Merchant 2013)

Prediction \Rightarrow

- Mismatch (e.g., a nominal antecedent) leads to ungrammaticality

- (1)
- A—Sue discussed our paper
B—She didn't [~~discuss our paper~~]
 - A—I discovered Sue's discussion of our paper
B—*She didn't [~~discuss our paper~~]

Problems for identity based approaches: Mismatch

- It has been known since Hardt 1993 that there are acceptable cases of mismatch between antecedent and ellipted material
- (2) Mubarak's survival is impossible to predict and, even if he does [survive], his plan to make his son his heir apparent is now in serious jeopardy. (COCA)

Recoverability-based approaches: VPE as a deep anaphor

Recoverability-based anaphoric approaches face the reverse problem wrt identity-based approaches

Prediction \Rightarrow

- Mismatch should have no effect if content is recoverable
 - No obvious account for the contrast between (3) and (4)
- (3) Mubarak's survival is impossible to predict and, even if he does, his plan to make his son his heir apparent is now in serious jeopardy. (COCA)
- (4) A—I discovered Sue's discussion of our paper.
B—*She didn't.

Strategies for resolving the contradiction

From the **Identity-based** perspective:

- **Abstract syntax** (e.g., Johnson 2001; Merchant 2013):
At the relevant level, the nominalization contains an appropriate identical VP
Problem: does not account for the unacceptability of certain cases of mismatch.
- **Repair** (Frazier and colleagues, e.g., Arregui et al. 2006):
Mismatched antecedents are ungrammatical but they can be more or less easily repairable, leading to higher or lower acceptability.

Strategies for resolving the contradiction

From the **Recoverability-based** anaphoric perspective:

- **General discourse conditions** predict the acceptability of mismatch (e.g., Kehler 2002; Kertz 2013)
Problem: Cannot predict all of the relevant distinctions
- **Processing cost** (e.g., Kim et al. 2011):
Mismatched antecedents are grammatical but they are harder to process leading to decreased acceptability.

Reduced acceptability despite a syntactically identical antecedent

- (5) He was in the kitchen, rubbing a bit of egg from his lip.
#He did with his napkin. (Compare ok: He did it with his napkin)
- (6) A—How did he get that ball into the hole?
(a) B—#He did.
(b) B—He got it into the hole.
- Reduced acceptability despite a syntactically identical antecedent is hard to explain, **as there is nothing to repair**
 - Syntax is insufficient to account for the acceptability of VPE

A Construction-specific Discourse Constraint on VPE

(7) **Question Under Discussion Relevance Constraint (QUDRC)**

If the QUD addressed by the anaphoric clause is a QUD conventionally introduced by the antecedent clause, VPE is acceptable and is preferred to VPA. If not, then the acceptability of the VPE clause correlates with the ease with which the question it addresses can be accommodated as QUD from the antecedent clause; the acceptability of VPA is inversely correlated.

(Cf. Roberts 1996, Ginzburg 2012, Onea 2016).

- VPA = Verb Phrase Anaphors, e.g., *do it, do this, do that*
- Does not apply to VPE in comparatives.
- VPA is subject to further complex conditions that we ignore here (see Flambard 2018, Oger 2019).

Illustrating the QUDRC

- (8) A—Sue discussed our paper.
 B—She didn't [~~discuss our paper~~].
 p = 'Sue discussed our paper'

- A asserts p
- This conventionally introduces $p \vee \neg p?$ as a QUD
- B's answer addresses this QUD (refuting it)
- The QUDRC is satisfied
- VPE is highly acceptable
- VPA is intuitively degraded (B— #She didn't do it.)

Illustrating the QUDRC

- (9) A—Sue discussed our paper.
 B—Sam did [~~discuss our paper~~] too.
 P = ‘discussed our paper’

- A asserts $P(\text{Sue})$
- This conventionally introduces satisfaction of the property $\lambda xP(x)?$ as a QUD
- B’s answer addresses this QUD by providing another referent satisfying the property (or ‘open proposition’)
- The QUDRC is satisfied
- VPE is highly acceptable
- VPA is intuitively degraded (B— #Sam did it too.)

Illustrating the QUDRC

- (10) A—He was in the kitchen, rubbing a bit of egg from his lip.
 B—#He did. / B—#He didn't.
 p = 'he was rubbing a bit of egg from his lip'

- The proposition p is expressed as a participial adjunct
- p is backgrounded
- $p \vee \neg p?$ is not a conventionally introduced QUD and the QUDRC is not satisfied
- Nothing in the context helps accommodate p as QUD
- VPE is intuitively degraded

Illustrating the QUDRC

(11) A—How did he get that ball into the hole?

(a) B—#He did.

(b) B—He didn't.

(c) B—He got it into the hole.

p = 'he got that ball into the hole'

- p is in a *wh*- interrogative and is thus backgrounded
- $p \vee \neg p?$ is not a conventionally introduced QUD
- The QUDRC is not satisfied
- Simple VPE as in (a) is intuitively degraded.
- (b) is acceptable because speaker B forces the accommodation of the backgrounded p to QUD in order to contradict it.
- (c) is acceptable, showing that it is not the content of (a) as such that is the problem but VPE itself; (c) can implicate, e.g., 'who cares how he did it.'

Illustrating the QUDRC: Nominal antecedents

- (12) A—I discovered Sue's discussion of our paper.
 B—#She didn't. (compare: She didn't do that.)
 p = 'Sue discussed our paper'

- p is expressed as an NP
- p is backgrounded
- $p \vee \neg p?$ is not a conventionally introduced QUD
- Nothing in the context helps accommodate p as QUD
- VPE is intuitively degraded
- VPA is intuitively more acceptable

Problem Is (12) unacceptable because of mismatch?
 Or because of the QUD Relevance Constraint?

Illustrating the QUDRC: Nominal antecedents

- (13) Mubarak's survival is impossible to predict and, even if he does, his plan to make his son his heir apparent is now in serious jeopardy. (COCA)
 (Compare: \approx Whether or not Mubarak will survive is impossible to predict and, even if he does, . . .)
 p = 'Mubarak will survive'

- p is expressed as an NP
- $p \vee \neg p?$ is not a conventionally introduced QUD
- **But** *survival* is a Polar Noun
- In certain interrogative contexts, such NPs can express the equivalent of an indirect polar interrogative
- This makes accommodation of $p \vee \neg p?$ as QUD very easy
- VPE is very acceptable
- **The QUDRC provides an account for variable acceptability of NP antecedents**

Illustrating the QUDRC: Non contrastive Adjuncts

Corpus evidence (Levin 1986, Miller 2011) and speaker intuitions suggest that:

- Non contrastive adjuncts reduce the acceptability of VPE
- Absence of a non contrastive adjunct reduces the acceptability of VPA

VPE/Adj-	Sue didn't write a song.	Sam did.
VPA/Adj-	Sue didn't write a song.	#Sam did it.
VPE/Adj+	Sue didn't write a song.	#Sam did for her.
VPA/Adj+	Sue didn't write a song.	Sam did it for her.

Non contrastive adjuncts and the QUD Relevance Constraint

- (14) A—Sue didn't write a song.
- a. B—She did.
 - b. B—Sam did.
 - c. B—#Sam did for her.
- p = 'Sue didn't write a song'; $P(x)$ = 'write a song'

- Uttering p conventionally introduces two QUDs:
 - $p \vee \neg p?$
 - $\lambda x.P(x)?$
- (14-a) and (14-b) address these QUDs and VPE is felicitous.
- (14-c) addresses a new QUD, not conventionally introduced by the antecedent, namely the question of who benefits from the event, explaining its intuitively reduced acceptability

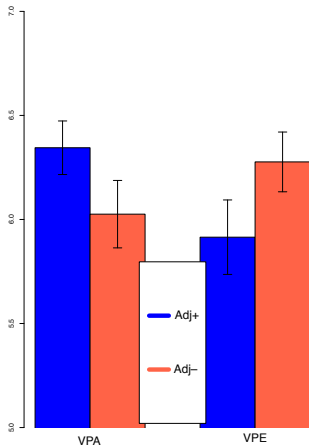
Experiment 1 Non contrastive Adjuncts: Materials and methods

Two binary factors: VPE/VPA and Adj+/Adj-

VPE/Adj-	Sue didn't write a song.	Sam did.
VPA/Adj-	Sue didn't write a song.	Sam did it.
VPE/Adj+	Sue didn't write a song.	Sam did for her.
VPA/Adj+	Sue didn't write a song.	Sam did it for her.

- 20 items distributed across 4 lists in Latin square design with 16 distractors (set up on IbexFarm)
- 47 participants (recruited on AMT) judged acceptability on a 1-7 scale

Experiment 1: Results



- No significant effect of Adj+ vs. Adj-
- No significant effect of VPE vs. VPA
- **The interaction** between Adj+/- and VPE/VPA was highly significant ($p < 0.0027$)
- Corroborates the validity of the QUD relevance constraint

Presence of a non contrastive adjunct after the ellipsis site reduces the acceptability of VPE

Experiment 2: Asserted vs. Backgrounded Antecedents

Materials

- 2 binary factors: VPE/VPA (*do/do it*)
ASS/BG (asserted/backgrounded)

VPE/ASS

A—When he was in the kitchen he read the instructions.
B—He did?

VPE/BG

A—He was in the kitchen when he read the instructions.
B—He did?

VPA/ASS

A—When he was in the kitchen he read the instructions.
B—He did it in the kitchen?

VPA/BG

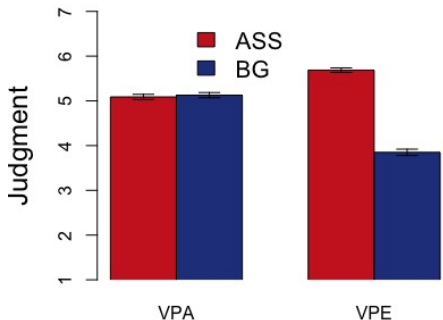
A—He was in the kitchen when he read the instructions.
B—He did it in the kitchen?

Experiment 2: Asserted vs. Backgrounded Antecedents

Methods

- 40 items, 79 participants
- 40 distractors
- Latin square design
- Set up on Ibex farm (Drummond 2014)
- Subjects recruited on Amazon Mechanical Turk
- Subjects instructed to judge the acceptability of B's response to A's utterance

Experiment 2: Results



- Significant difference ($p < .01$) in acceptability for VPE depending on whether the antecedent clause is asserted or backgrounded
- VPA is insensitive to the BG/ASS status of the antecedent (no significant difference)

A backgrounded antecedent reduces the acceptability of VPE

Discussion

- Syntactic identity-based theories have no way to account for this difference since there is an equally distant syntactically identical antecedent in both ASS and BG conditions.
- Theories invoking repair ('recycling') cannot explain the difference since there is nothing to repair (the antecedent is matched)
- The QUDRC makes the correct predictions

Experiment 3: Disentangling mismatch and discourse

- Most studies on VPE assume that nominal antecedents degrade VPE because of the syntactic mismatch (identity condition violation)
- But mismatch typically leads to backgrounding the antecedent, i.e., to violating the QUDRC
- How can we tell whether decreased acceptability is due to mismatch or to the discourse constraint or to both?
- Need to find a design where we can vary
 - Category Match vs. Category Mismatch (CM/CMM) and
 - Satisfaction of the QUDRC (QUD+/-)within item
- We can do this thanks to polar nouns

Experiment 3: Disentangling mismatch and discourse

A typical item based on the factors CM/CMM and QUD+/-

CM/QUD+ We are uncertain whether he will participate in the study. It will improve the results if he does.

CMM/QUD+ We are uncertain of his participation in the study. It will improve the results if he does.

CM/QUD- We are uncertain whether he will participate in the study. It will improve the results if he does actively.

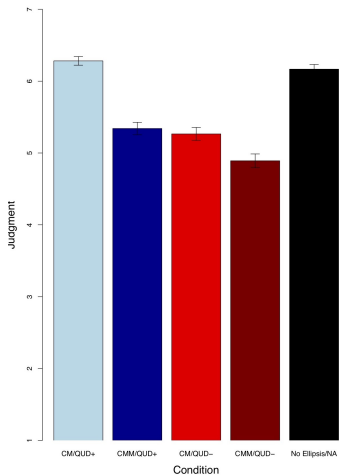
CMM/QUD- We are uncertain of his participation in the study. It will improve the results if he does actively.

CONTROL We are uncertain whether he will participate in the study. It will improve the results if he participates actively.

Experiment 3: methods

- 25 items
- We included a non elliptical condition as a control to ensure that any decrease in acceptability in the QUD– conditions was not due to a bad choice of adverb.
- 61 participants
- Methods otherwise similar to previous experiments

Experiment 3: Results and discussion



- No significant difference between CM/QUD+ and control: adverbs do not decrease acceptability
- All other conditions are significantly less acceptable ($p < .001$)
- No significant difference between violating only identity and violating only the QUDRC discourse condition
- Significant interaction: Violating the QUDRC leads to a stronger decrease in acceptability with matching antecedents than it does with mismatch

Syntactic identity improves acceptability independently of the QUDRC

- Experiment 3 shows that even when the QUDRC is satisfied, there is a penalty for mismatch.
- Other experiments we and others have run show that this is a very general effect.
- Is this preference for a syntactically identical antecedent really an argument against the recoverability-based anaphoric theory of VPE?

Does the preference for matched antecedents argue against the recoverability-based anaphoric approach?

Contrary to a frequent assumption, it is not the case that possible antecedents of deep anaphors are constrained only by semantics and pragmatics.

- (15) a. Paul is from France_i but he has never actually lived there_i.
 b. #Paul is French_i but he has never actually lived there_i.
 (McKoon et al. 1993)
- (16) [S_j [NP_i A snake] appeared from under the rock].
 It_i/#_j scared me.
 That_j/#_i scared me.
 (Hegarty 2003)

Does the preference for matched antecedents argue against the recoverability-based anaphoric approach?

Contrary to a frequent assumption, it is not the case that possible antecedents of deep anaphors are constrained only by semantics and pragmatics.

- (17) The UN noted [the constant bombardment of the city by the allied forces]_i and [the frequent attacks on civilians by snipers]_j. They/Both_{i+j} went against international laws.
- (18) The UN noted [that the allied forces constantly bombed the city]_i and [that snipers frequently attacked civilians]_j. #They/Both_{i+j} went against international laws.

The preference for a syntactically identical antecedent in VPE is not an argument against a recoverability-based anaphoric theory of VPE

Why the QUDRC?

Usage-based motivation

- Study in progress of the the usage of VPE in the SOAP corpus (US soap opera scripts)
- Very natural informal dialogue
- Great majority of cases involve
 - antecedent in an assertion and VPE in a confirmation or contradiction of that assertion.
 - antecedent in a polar question and VPE as answer to that polar question
 - antecedent is almost always the VP of main clause
 - the rare cases where the antecedent is in a subordinate clause are principally *if* conditionals, raising a QUD
- Presumably, VPE is initially entrenched in childhood learning as a construction whose use is addressing polar QUDs, and extended to other cases (e.g., comparatives) later

Why a preference for syntactically identical antecedents?

Usage-based motivation

The spoken corpus data just discussed also provide a path towards a usage-based account of the preference for identical antecedents in VPE, since the typical antecedents, assertions and polar questions, are expressed using a clausal structure, with a VP.

Deep vs. Surface Anaphora

Hankamer and Sag 1976 use 'anaphora' to cover both overt anaphors and ellipsis and claim that both cases can be deep or surface. They propose 3 criteria distinguishing deep vs. surface:

Deep

Exophoric uses

Do not require syntactic identity

Do not allow missing antecedents

Surface

No exophoric uses

Require syntactic identity

Allow missing antecedents

In the domain of predicate anaphora:

	surface anaphors	deep anaphors
ellipsis	VPE	NCA
overt anaphors	<i>do so</i>	<i>do it/this/that</i>

Questioning the deep/surface distinction: identity

Syntactic identity and surface anaphors

- Case of VPE discussed above
- For the overt surface anaphor *do so* it has similarly been shown that mismatched antecedents are possible (Kehler and Ward 2007, Houser 2010)
- Similarly, sluicing—the other prime example for a putative syntactic identity requirement—has been shown to allow a far greater variety of mismatched and inferred antecedents than previously thought (Poppels and Kehler 2020, Anand et al. 2020)

Syntactic identity and deep anaphors

- Research has consistently found that deep anaphors (*do it/this/that*) are also sensitive to mismatch (but decreases in acceptability are typically smaller than with surface anaphors)

Questioning the deep/surface distinction: exophoric uses

Miller and Pullum 2014 show that

- exophoric VPE is far more productive in attested data than usually assumed
- acceptability of VPE and VPA in exophoric uses is explained by our initial version of the QUDRC
- in particular, when the QUDRC is satisfied, *do it* is worse than VPE in exophoric uses

- (19) [Context: Allie and Casey manage to lock Noah and Luke (who have been avoiding each other) together on a roof in a desperate attempt to get them to talk. When they realize that they have been trapped, the following conversation occurs.]
 Noah: Please tell me they didn't.
 Luke: They did.
 (Compare with Noah saying: #Please tell me they didn't do it.)

Questioning the deep/surface distinction: exophoric uses

- *Do so* is far more frequent with mismatched antecedents than VPE (compare: Houser 2010 and Bos and Spender 2011)
- But *do so* appears to be absolutely resistant to exophoric uses
- Once again, the H&S criteria do not pattern consistently

Questioning the deep/surface distinction: missing antecedents

Miller et al. 2019 provide experimental evidence that H&S's missing antecedent effects with deep anaphors are in fact explained by the QUDRC. Simply their examples are constructed so that there is a confound between the two factors.

Questioning the deep/surface distinction: conclusion

- The H&S criteria do not pattern consistently and do not provide a basis for a two way division among anaphoric phenomena
- In particular there is no evidence that there is a clear demarcation line between anaphors that require and do not require syntactic identity

Syntactic identity vs. silent syntax at the ellipsis site

Why has there been such vigorous attachment to the syntactic identity idea despite massive counter-evidence?

- In the sociology of the field, defending syntactic identity is associated with defending unpronounced syntax at the ellipsis site
- Inversely, proponents of recoverability-based anaphoric approaches are typically associated with arguing against unpronounced syntax at the ellipsis site (e.g., Culicover and Jackendoff 2005)
- Crucially, the two questions are independent: it is entirely possible that syntactic structure is reconstructed at the ellipsis site (in certain elliptical constructions) without that structure being necessarily recovered from an identical antecedent

Evidence for unpronounced structure at the ellipsis site

The strongest piece of evidence for unpronounced structure is extraction from the ellipsis site:

(20) She threw away everything \emptyset_i [she could ~~throw away t_i~~]

But such extraction is possible with NCA, supposed to be a deep anaphor!

(21) You can throw away anything \emptyset_i [you'd like ~~to throw away t_i~~]

And it is also possible with NCA in languages like French which do not have VPE:

(22) Tu peux jeter tout ce que_i tu veux [jeter ~~t_i~~]

Evidence for unpronounced structure at the ellipsis site

- Similarly, evidence has been provided that the ellipsis site can trigger structural priming in VPE. But, Xiang et al. 2019 find that NCA can also trigger structural priming (clearly not what they expected) despite the fact that it is supposed to be a deep anaphor
- Also, Bélanger 2014, found evidence for a difference between VPE and VPA using the ‘lure intrusion’ paradigm, that suggests “that VPE does not access a linguistic representation of the antecedent but rather, like recall, accesses a conceptual representation and regenerates using recently activated lexical items”. (p.ii).


The best of both worlds?

- It is a remarkable fact about the state of the field that very competent colleagues have been disagreeing about identity and unpronounced structure for over 40 years
- Feeling of talking past each other or not taking each other's arguments seriously
- Might the situation be resolved by delinking the idea of unpronounced structure and the requirement that such unpronounced structure be present under identical form in the discourse context?

What would it look like?

- Might contribute to the explanation for why an identical antecedent has a stronger improvement effect on acceptability with VPE than with VPA: identity facilitates access to the referent with VPA, but with VPE it facilitates not only access to the referent, but the reconstruction process
- If this is right then we would expect NCA to pattern with VPE rather than with VPA in this respect, since it also allows extraction from the ellipsis site

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