Crosslinguistic variation in explanatory discourse? Implicit causality of verbs in German and Norwegian

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Crosslinguistic uniformity vs. diversity

Where to expect uniformity...
Languages should behave uniformly with respect to their basic semantic and pragmatic principles: e.g. all languages should adhere to **AVOID ACCOMMODATION** (van der Sandt 1992; Zeevat 2000).

Where to expect diversity...
Languages differ with respect to lexical and syntactic but also discourse properties: e.g. discourse segmentation in German vs. Norwegian (Fabricius-Hansen et al. 2005, Ramm 2011).

- Case study: explanatory discourse in German vs. Norwegian
- Compare the two languages in a corpus of discourse productions that were elicited under experimental conditions
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The phenomenon: Implicit causality bias

- Implicit causality (IC) verbs: two animate arguments
- **NP1 V-ed NP2 because** . . .
- preference for pronominal reference

(1)  
   a. Peter frightened Mary because . . . he started yelling for no reason.
   b. John congratulated Sarah because . . . she won the race.

- bias: proportion of continuations mentioning NP1 or NP2 first
- *frighten*: NP1 bias
- *congratulate*: NP2 bias
- truly implicit: may be observed for non-marked explanations (Kehler et al. 2008)

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Our proposal: IC bias reflects explanation preferences

Main claim

Implicit causality verbs trigger specific kinds of explanations associated with one of the two participants

- Implicit causality bias may be observed whenever a *because* clause can specify certain semantic entities which are associated with only one of the participants.
- The specific bias properties of a verb are dependent on features well-known from theoretical semantics

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What determines the bias?

(5) John congratulated Mary because . . . she won the race.

- Bias pattern dependent on
  - causal elaboration possibilities in $NP_1 \text{ verb-ed } NP_2$
  - the semantic properties of $because$ (clauses):
    $because$ introduces factive causes, propositional in nature
    (Solstad 2010)
  - verb semantics + typology of explanations
because explanations: causes and reasons

- Simple causes are causes of (attitudinal) states or events
  
  (6) **Simple/direct cause:**
  
  John disturbed Mary because he was making lots of noise.

- Reasons are causes of attitudinal states involving intentionality
  
  (7) **Externally anchored reason (‘Beweggrund’):**
  
  John disturbed Mary because she had damaged his bike.

  (8) **Internally anchored reason (‘Einstellung’):**
  
  John disturbed Mary because he was angry at her.

- these three categories account for almost all explanations which can be found in naturally produced texts
- bias patterns strongly depend on the availability of these explanation types
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Elaboration possibilities I: stimuli

(9) \( \text{annoy} \sim f \text{ CAUSE } s_{\text{att}} \)

\( \text{Christian annoyed Hann} \text{a because he sang loudly.} \)

- NP1 – “Christian” – is a ‘placeholder’ for a proposition, associated with NP1
- reinterpretation of NP1 as NP1 property
- simple cause: \( x \) singing loudly brings about the attitudinal state of \( y \) being annoyed
- evidence: the stimulus argument of a psych verb – stimulus–experiencer or experiencer–stimulus – may also be realized by a \textit{dass} ‘that’ clause

(10) a. It annoys Mary that Peter sings loudly.
b. Mary hates that Peter sings loudly.
c. #It killed_{psych} Peter that Mary stabbed him in the back.
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\[
\begin{array}{c|c|c}
\text{e} & \text{x} & \text{y} \\
\hline
\text{f CAUSE } s_{\text{att}} & \text{x} & \text{e: sing(x)} \\
\text{f:} & \text{loud(e)} & \\
\text{s_{att}: annoyed(y)} & \\
\end{array}
\]

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ontological constraints

- *because* introduces factive causes, which are propositional in nature.
- *because* cannot specify the causing event of all causative predicates (contra Hartshorne & Snedeker).
- murder $\leadsto$ e \text{CAUSE} s

(11) #*Tom ermordete Louisa, weil er sie in den Rücken stach.*
    ‘Tom murdered Louisa because he stabbed her in the back’.

- e is ‘associated with’ Tom, who is the agent of the causing event.
- psych verbs: \text{f CAUSE} S_{att}
- simple causes with psych verbs, **not** with agent-patient verbs.
Elaboration possibilities II: Presuppositions

- *because* may elaborate a presupposed preceding event

(12) NP2 bias:

\[
\begin{align*}
&\begin{cases}
  e'z \quad & e' <_t e \\
  z: \text{AGENT}(e') \\
  z=y
\end{cases} \\
\end{align*}
\]

\[
\begin{array}{c}
\begin{array}{c}
  e \times y \\
  e: \text{PUNISH}(x,y)
\end{array}
\end{array}
\]

- agent of presupposed event identified with ‘bias argument’ of punish-event
- “causes precede their effects”
- explanations are external reasons
- we expect strong bias effects: AVOIDACCOMMODATION
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*Lars bestrafte *Melanie*, *weil sie* das Geld geklaut hatte.*
‘Lars punished Melanie because she took the money.’

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<table>
<thead>
<tr>
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▷ we expect strong bias effects: AVOIDACCOMMODATION
elaboration possibilities lead to specific explanation patterns

agent–patient predicates without presuppositions don’t offer any elaboration possibilities ⇝ no obvious explanation strategy

(13)  *Judith verprügelte* (‘bashed’) *Richard*, *weil* (‘because’) …

a.  **external reason:**

   *er ihren Bruder gequält hatte.* (‘he tormented her brother’)

b.  **internal reason:**

   *sie sehr wütend war.* (‘she was very upset.’)

any distribution of verb biases is possible

**but:** bias should follow from the ratio of external to internal reasons

- external reasons ⇝ NP2 bias
- internal reasons ⇝ NP1 bias
clear bias effects when *because* clause may elaborate on a semantic entity associated with an argument

factors and their predictions

1. ‘unspecified property’: presence of stimulus
   - causal explanation: simple causes
   - bias: stimulus

2. presupposition
   - causal explanation: externally anchored reasons
   - bias: argument associated with presupposition

we predict the bias of agent-patient verbs to follow from the ratio of external to internal reasons (no simple causes available)
The design of the study I

IC versus non-IC verbs

Some \( NP_1 \) verb \( NP_2 \) configurations are explanatorily deficient and require causal elaboration. This provides us with a theoretically grounded classification of IC vs. non-IC verbs:

- Explanation should be the default coherence relation for verbs with missing content (\( es-, se- \) or +psp-verbs)
- All other verbs should have a much more limited need for explanation

- How measure the proportion of explanations?
  - Count number of explanations after a full stop (cf. Kehler et al. 2008)
  - Within-factor connective: full stop vs. because
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The design of the study II

Crosslinguistic generalizability

Our account only hinges on verbal semantics and possible explanations. We therefore expected IC bias and the underlying distribution of explanation types to be crosslinguistically stable.

- We chose German and Norwegian because...
  - verbs can be perfectly matched in meaning
  - the two languages differ in discourse segmentation
    (Fabricius-Hansen et al. 2005, Ramm 2011)
    - German: hypotactic sentences, explicit discourse marking
    - Norwegian: paratactic sentences, less explicit marking
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## Crosslinguistic variation?

- After a full stop, there is no (simple) discourse marker for explanation relations
- Explanations thus have to be left implicit

    - **AVOID ACCOMMODATION**: Verbs with missing content require implicitly marked explanations across languages
      - ($\uparrow$ German = Norwegian)

    - Given the difference in discourse structure: more explanations after a full stop in Norwegian than in German
      - ($\uparrow$ German $\neq$ Norwegian)
The design of the study III

Variation at the level of individual verbs

- Ambiguous agent-patient/stimulus-experiencer verbs may differ crosslinguistically in their interpretation preferences
- Cases under study: *provozieren/provosere* and *übersehen/overse*
  - *NP1 provozierte NP2*: preferably *ap*-interpretation
  - *NP1 provoserte NP2*: preferably *se*-interpretation
  - *NP1 übersah NP2*: preferably used as a perception (es-) verb
    - *NP1 overså NP2*: both, es- and *ap*-reading

- Crosslinguistically different explanation profiles for both verbs
- Crosslinguistically different IC-biases in the case of *overlook*
Production Study
52 Germans and 48 Norwegians participated in a discourse continuation study.

Instructions: “continue the discourse in the most natural way” (or skip it if you can’t come up with a continuation).

101 verbs: 16 se; 18 es; 10 ap/+psp; 57 ap/–psp
- 1. block full stop: NP1 verbed NP2. …
- 2. block because: NP1 verbed NP2, because …

Counterbalanced between NP1/2 = masc./fem.

Latin square design, four lists.
The resulting corpus of a total of 10,100 continuations was annotated wrt. the following categories:

- Bias annotation (agreement: Cohen’s $\kappa = .93$)
  - NP1 vs. NP2 vs. no anaphor
  - unequivocal vs. ambiguous (*he loved her*)
  - continuation contains subordinated sentence (bias of embedded sentence)
  - kind of anaphor (pronoun, DP, proper name)

- Discourse relation (agreement: Cohen’s $\kappa = .72$)
  - sensible continuation (skips and nonsense $\triangleright$ mis. values)
  - temporal order (*event* continuation after *event* prompt?)
  - explanation? (*weil*/*fordi* test)
  - elaboration? (*indem*/*ved å* test)

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Proportions of Explanations
Proportion of explanations after a full stop

- Verbs that require causal elaboration triggered 64.5% explanations
- Ordinary *ap* verbs received only 39.5% explanations
- No differences between German and Norwegian
- When forced to by pragmatic principles, uniform behavior across languages
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When forced to by pragmatic principles, uniform behavior across languages.
All three types of verbs that require further causal elaboration predominantly received explanations.

Again, effects were crosslinguistically stable.
Explanation Profiles
(14) a. Mary fascinated John because she was so talented.
b. Mary feared John because he was very aggressive.

Psych verbs overwhelmingly prompted simple causes
Agent-patient verbs don’t allow for simple causes
(15) Mary thanked **John** because **he** had repaired **her** bike.

Verbs with a presupposition prompted explanations about the presupposed content

Participants avoided accommodation
Implicit Causality Bias
IC-bias was the same across languages

(16) NP1 verbed NP2 because he/she...

German and Norwegian verbs closely corresponded in bias

\((r = .92; p < .01)\)
Psychverbs

- Simple causes of psych verbs specify a property of the stimulus causing the experience
  - stimulus-experiencer verbs: NP1 bias
  - experiencer-stimulus verbs: NP2 bias
IC-bias of psych verbs

- Experiencer-stimulus: NP2-bias
- Stimulus-experiencer: NP1-bias
- Bias due to simple causes
Agent-patient verbs

- +PSP verbs: bias towards the argument associated with the presupposition (= ext. reason)
- -PSP verbs: bias is determined by the ratio of internally to externally anchored reasons
IC-bias of agent-patient verbs without/with a PSP

- Nine out of ten +PSP verbs had presuppositions associated with NP2 (exception: *apologize to*)
- NP2 bias
  - –PSP: int. reasons (↗ NP1) = ext. reasons (↗ NP2)
Nine out of ten +PSP verbs had presuppositions associated with NP2 (exception: *apologize to*)

▷ NP2 bias

- PSP: int. reasons (▷ NP1) = ext. reasons (▷ NP2)
The ratio of int. to ext. reasons is a good predictor for IC-bias

(accounted variance: $R^2 = .75$)
Microvariation
Explanations: IntReasons in German; SimpCauses in Norwegian

IC bias: both explanation types associated with NP1; no difference in bias
Explanations: Simp Causes in German; Int Reasons in Norwegian

IC bias: NP2 bias in German; NP1 bias in Norwegian
We have demonstrated that...

- IC-bias follows from specific explanatory elaboration strategies
- The phenomenon is crosslinguistically stable
- Observed micro variation of ambiguous verbs can be accounted for by taking into account their default interpretations
- IC-bias is fully predictable even at the level of individual verbs
Conclusion

Expectations about upcoming discourse

Even though German and Norwegian discourse is structured very differently, discourse expectations seem to be generated by the same mechanisms.