The licensing of discourse particles in complex questions: Evidence from graded judgments and event-related potentials

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Background

Question-sensitive discourse particles in German: denn (lit. then), nicht (lit. not), schon (lit. already), wohl (lit. well...)

Q-DP: enrich the pragmatic impact of questions, modifying illocutionary force

- need to be licensed by interrogative clause type / mood

Syntactic licensing constraints:
- licensed by a-commanding licensor in the FORCE projection
- licensor must be locally accessible: either minimally c-commanding the DP, or c-commanding the DP via a wh-chain (1)

Wer hat denn (lit. group) dass Peter (lit. “has understood“) who has (DP) that Peter (DP) comes?

Semantic scope of Q-DP depends on its surface position:
- Denn, end (who), dass Susi (who) “has understood“? does Peter (DP) understands? What has he that?”
- What does he think that Susi (who) has understood?

What is licensing violations for Q-DP in the EEG?
- Denn: gesagt, dass Peter *denn* kommt?
- Wenn der Koch die Zwiebeln anbraten sollte, dann *denn* is understood? denn now has (DP) that Peter (DP) comes?

Q-DP in declaratives receive bad accessibility ratings.
- Does Peter *denn* comes?
- No N400 in conditions without licensor

Research Questions

What are the exact licensing conditions for Q-DPs?
- How are licensing violations for Q-DPs reflected in the EEG?
- What are the effects of failed licensing of the Q-DP den?

(1) the interrogative element (here a wh-phrase) is missing altogether?

(2) the interrogative element c-commands the DP while the DP is not locally accessible: “too far away”?

Discussion

Q-DP licensing in questions is subject to syntactic licensing constraints, gradient reduction in accessibility for absent licensors
- “less acceptable” or “fluency licensing” (cf. Krizan) assume the former.

ERPs for Q-DP vs. non-Q-DP:
- root clauses: ERP effects are surprisingly weak, no N400 for unlicensed Q-DP
- embedded clauses:
- no licensor: no N400, but P600
- inaccessible licensor: no N400, but P600
- descriptive contrast for embedded clauses matches behavioral data.

Q-DP in declaratives receive bad accessibility ratings.
- In EEG measurements, there are no N400 to reflect this (as could be expected with failed licensing):

- The licensing failure is not caused by problems in lexical retrieval.
- EEG patterns match the processing of syntactic and possibly semantic/pragmatic dependencies

Link to negative polarity items

Negative polarity items: NPIs, English: ever, any; German: jarah
- may enrich the pragmatic impact of negation (strengthening)
- licensed in the semantic scope of negation (c-commanded by licensor, occasionally excluding long-distance licensing)
- behavioral/intensive licensing for present, but inaccessible licensor: higher acceptance rates for inaccessible licensors than absent licensors

ERPs effects (relative to present and accessible licenses for NPIs):
- German: no licensor: N400 [4], P600 [5]
- licensor: N400 + P600 [5]
- N400 amplitude decreased for inaccessible compared to absent licensor [2]
- see (7) for discussion of binaural licensing
- English: no licensor: P600, no N400 [6]
- licensor: P600, no N400 [6]
- N400 amplitude decreased for inaccessible licensor [6]
- see also for discussion of binaural licensing

Questions:
- Mechanisms behind licensing?
- Reason for discrepancy between languages?

Relationship of our findings to NPI literature:
- Our findings for embedded clauses are more similar to findings for English NPI than for German NPI
- - no N400 in conditions without licensor
- - P600 for absent or inaccessible licensor (descriptively weaker for inaccessible licensors)
- This suggests that contrast between findings for English and German NPI do not reflect a general contrast between processing of long-distance dependencies in both languages.

Experiments

Stimuli

40 items in 8 different conditions (2x2x2 designs), factors: CLAUSE TYPE (declarative or question), DP (denn vs jetzt), DP position (root or embedded).

Experiment 1: Acceptability ratings

Magnitude Estimation task, 57 participants
- Analysis: ANOVA fixed effect CLAUSE TYPE (declarative or question), DIP (denn vs jetzt), DIP position (root clause or embedded clause) and interactions (see also for discussion of illusory licensing)
- Separate analyses for jetzt-dit and denn-dit: fixed effect CLAUSE TYPE, random terms INTERCLause, random factor (root clause and embedded clause), separate ANOVA for positions (root clause and embedded clause), mean amplitude in time window for 600-1000ms for single words, 200 ms blank screen ISI

Reason for discrepancy between languages?
- No N400 in conditions without licensor
- N400 for unlicensed Q-DP
- No difference between Q-DPs and non-Q-DPs in root clauses when licensing constraints are met.
- No difference between Q-DPs and non-Q-DPs in root clauses when licensing constraints are met.
- For both declaratives and interrogatives:
- More positive-going for denn than jetzt at anterior sites
- More negative-going for denn than jetzt at central posterior sites
- No statistically significant effects or interactions of clause type
- No difference between Q-DPs and non-Q-DPs
- Root clause effects are surprisingly weak, they do not reflect acceptability ratings.

Experiment 2: EEG

Visual stimulus presentation, randomized word-by-word, 850 ms for single words, 300 ms blank screen ISI
- 22 participants, 64 electrodes, filtered bandpass 0.5-70Hz before segmentation
- Visual stimulus presentation, chunked or word-by-word, 800 ms for single words, 200 ms blank screen ISI
- Selected time window for analysis: 600-1000 ms, presented separately for root clauses and embedded clauses

Some of these people...
References


