

Theme-containing utterances as strategies to address a broad QUD

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Introduction. In a Question Under Discussion (QUD) model of discourse (Ginzburg, 1994; Roberts, 1996), any utterance U uttered in a context C_1 elaborates on the maximal QUD in that context (max-QUD_{C_1}). Following Vallduví (2016), QUDs play an essential role in defining the two parts in which an utterance can be divided: *theme* and *rheme*. An utterance must always contain a *rheme*, which is the part that elaborates on the QUD, its actual update potential. It may also optionally contain a *theme*, which replicates content already present in the QUD. For instance, the explicit QUD in (1A) is answered in (1B) by an all-rhematic fragment utterance. This question could also be answered by an utterance containing a theme, as ‘We are having’ in (1B’), which does not address the QUD but merely copies material from the QUD.

- (1) A: What are we having for dinner? (=Max-QUD $_{C_1}$)
B: FISH $_{rheme}$. B’: [We are having $_{theme}$] [FISH $_{rheme}$] [for dinner $_{theme}$].

Themeless utterances are the default in question-answer pairs; theme-containing utterances are possible, but marked. Given that themeless utterances can by themselves answer the maximal QUD and update the context, this raises the question of what the role of themes is in theme-containing utterances. The answer in Vallduví (2016) is that theme-containing utterances signal that the QUD update will have an intermediate step: the theme of a theme-containing utterance will change the maximal QUD from Max-QUD $_{C_1}$ to Max-QUD $_{C_1'}$ and the rheme of this utterance will address Max-QUD $_{C_1'}$. Thus, theme-containing utterances indicate that what is being addressed is not the maximal QUD, but a related one. Theme-containing utterances are, for instance, required when Max-QUD $_{C_1}$ is not addressed directly, but rather is split into several subQUDs (i.e., narrower QUDs), as in example (2) (Büring, 2003).

Vallduví predicts that theme-containing utterances should also be used to address a broader QUD than Max-QUD $_{C_1}$, as in (3-b) which does not address (3-a) but rather (3-c). While the use of theme-containing utterances to address subQUDs has been extensively studied, their use to address broad QUDs has barely received any attention. The goal of this paper is to study whether there is indeed a correlation between addressing a broad QUD and using a theme. Two production studies were carried out in Catalan, a language which marks themes in a clear way.

- (2) How was the concert? (3) a. Does Eva eat salmon?
The sound was awful, the audience was b. Eva HATES fish.
enthusiastic, and the band was fantastic. c. How does Eva feel about fish?

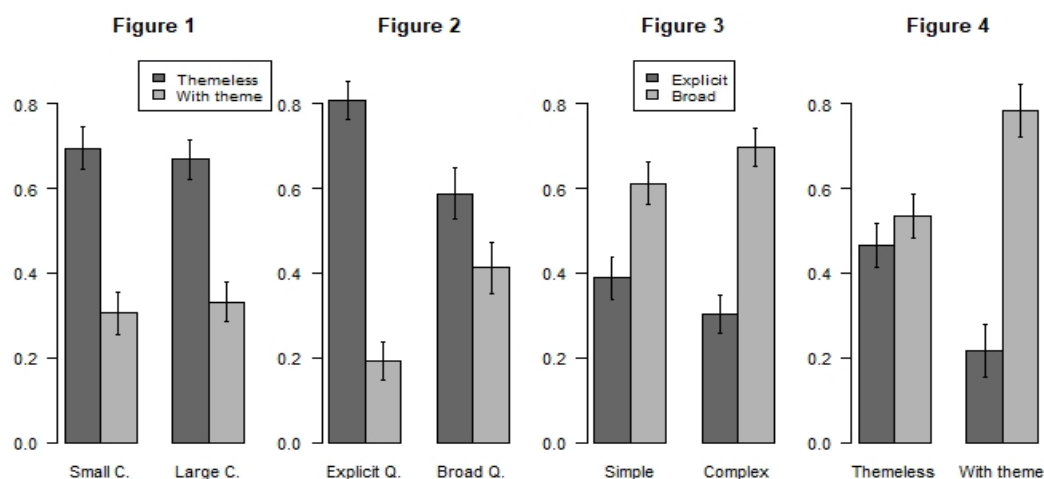
Experiment 1. A discourse-completion study was carried out: participants were asked to answer some questions based on information they had received. This contextual information was of two types: in the Large Context condition (4-a), participants received more information than necessary to answer the question (5-a); in the Small Context condition (4-b), they had just enough information to answer it. In both cases, they were indicated how to start their answer (5-b).

- (4) a. Large C.: Eva doesn’t like fish. (5) a. Should I cook salmon for Eva?
b. Small C.: Eva doesn’t like salmon. b. Answer: No, ...

Two lists were generated with 16 items and 16 fillers. 35 Catalan native speakers participated in the experiment, yielding 560 answers. The data was coded according to whether (i), in the Large Condition, the answer addressed the Broad Question (‘Eva does not like fish’) or the Explicit Question (‘Eva does not like salmon’) and whether (ii) it contained a theme or not: utterances with overt subjects (as opposed to null subjects) and with dislocated phrases were coded as theme-containing (see examples (6) and (7), respectively).

- (6) **El Pep** no beu alcohol. (7) No en beu, **d’alcohol**.
The Pep not drinks alcohol. not PART $_i$ drinks, of alcohol $_i$

We expected more use of themes in the Large condition than in the Small condition, since only in the former participants were able to address the Broad Question. However, as can be seen



in Figure 1, the distribution of themes is not significantly different. The Large condition was further analyzed to see what QUDs participants had actually chosen to address and whether there was a correlation with the presence of theme. A mixed effects model with random intercepts for Subject/Item revealed a main effect of QUD addressed on the proportion of themes ($p < .001$), it being higher with Broad QUDs, as shown in Figure 2.

Experiment 2 had a similar design to the previous experiment, but the context was not manipulated (it always contained more information than necessary to answer the Explicit Qud). Instead, the prompt to answer was manipulated: the Simple Prompt condition was identical to the previous experiments ('Yes, ...'), while the Complex Prompt condition started with a theme ('Yes, Eva ...'). The experiment contained 16 critical items and 16 fillers. 33 native speakers of Catalan participated yielding 528 answers. The answers were coded according to the QUD addressed (Broad or Explicit) and, in the case of Simple Prompt, whether the answer contained a theme.

We expected that in the Complex Prompt condition, the presence of a theme would bias participants to address a Broad Question more often than in the Simple Prompt condition. A mixed effects model with random intercepts for Subject/Item showed a main effect of type of prompt on the proportion of Broad QUDs ($p < .01$), it being higher with Complex Prompts, as shown in Figure 3. In addition, the Simple Condition was further analyzed to study whether there was a correlation between use of themes and QUD addressed. A mixed effects model with random intercepts for Subject/Item showed a main effect of use of themes on the proportion of Broad QUDs ($p < .01$), as shown in Figure 4.

Discussion. Experiment 2 clearly showed that theme-containing utterances have a preference to address a Broad QUD. The results of experiment 1 are somewhat more mixed because, although it is true that themes are used more often to address a Broad Question than to address an Explicit Question, themes are not necessary whenever a Broad Question is addressed: that is, themeless utterances can also address Broad QUDs. This is probably the case when the link between the Explicit QUD and the Broad QUD is so obvious that the transition does not need to be marked. Another interesting result that emerged from the data was that there was notable variation in the amount of answers addressing the Broad question that each item triggered. The ones which triggered more broad answers are those in which the speaker can assume the hearer is trying to solve a problem and giving a broad answer may help to solve it. For instance, the question 'Should I bring a beer to Pep?' was frequently answered by 'No, Pep does not drink alcohol', since the broad answer eliminates other alternative drinks the speaker may have in mind.

References. Büring, D. (2003). On D-Trees, Beans, and B-Accents. *L&P*, 26(5):511–545. • Ginzburg, J. (1994). An update semantics for dialogue. In *Proceedings of the first International Workshop on Computational Semantics*. • Roberts, C. (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. *OSUWPL Volume 49*. • Vallduví, E. (2016). Information structure. In *Cambridge Handbook of Formal Semantics*. CUP.