Experimental evidence concerning the exhaustivity of wh-interrogatives embedded under German *wissen* ('know')

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We present two experiments investigating the exhaustivity of embedded wh-interrogatives in German (see [1]), for which a number of readings have been posited in the literature (see [2]). Understanding the exhaustivity properties of such sentences is central for the semantic analysis of questions, as different theories make different predictions regarding their availability (see Gronendijk & Stokhof [1984], Kartunnen [1977], Heim [1994]).

(1) Peter knows who sang.

(2) a. **Strong Exhaustivity (SE)**
Peter knows for all the people who sang that they sang, and that nobody else sang.
b. **Intermediate Exhaustivity (IE)**
P. knows for all the people who sang that they sang, and has no false beliefs regarding those who didn't.
c. **Weak Exhaustivity (WE)**
Peter knows for all the people who sang that they sang.
d. **No Exhaustivity (NE)**
Peter knows for some people who sang that they sang.

Experiment 1 is a pilot study testing the availability of the readings of questions embedded under German *wissen* ('know') (illustrated in [2]). Apart from Cremers & Chemla (2016) and a small pilot by Klinedinst & Rothschild (2011), this study is among the first to validate the exhaustivity readings of embedded interrogatives experimentally, and, to the authors' best knowledge, the first for German. ***Design.*** We employed a truth-value judgement task with a 2 (+/-NEG) x 4 (Reading: SE, IE, WE, NE) design. The inclusion of a negated embedded interrogative as a target sentence reverses the entailment patterns that exist between (2a-d). Participants had to judge the correctness of an embedded interrogative like (1) against a context with a fixed domain, which was manipulated to provide the scenarios appropriate for the readings in (2a-d). Justifications for the responses were also collected. Each participant saw one item and four fillers (each consisting of a context-sentence pair). ***Results (selection).***

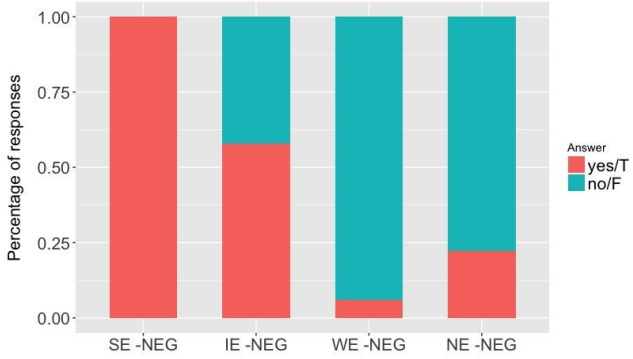

Figure 1: Percentage of responses (yes/no)

The SE reading had an acceptance rate of 100%, and IE items were accepted only in 55% of the cases. The comments of people who rejected IE items showed that they preferred the logically and epistemically stronger SE reading. WE and NE readings received a smaller proportion of yes-

ratings (6%, 22%, respectively). ***Discussion.*** Descriptively, our results for German are similar to those in Cremers & Chemla (2016) for English: the SE reading is clearly attested, and the IE reading is available to the majority of the participants, whereas WE and NE readings are not.

Experiment 2, currently ongoing, further investigates the properties of SE and IE readings, both of which are available under *know*. The hypothesis tested is that the SE/IE contrast is the result of a *de re/de dicto* ambiguity. ***Background.*** The proposal is based on an analysis of questions as definite descriptions: *Peter knows who sang* means *Peter knows the complete list of true answers to the question "who sang"*. This denotation is obtained by applying a sigma/MAX operator to the basic question denotation, which returns the maximal sum answer proposition (see, e.g. Dayal 1996). Like definite descriptions, this may receive different interpretations in case the subject (*Peter*) has incomplete knowledge in comparison with the reporter of the utterance, giving rise to so-called *de re/de dicto* ambiguities. The relevant readings are illustrated in (3) and (4). Crucially, IE contexts can be captured with the *de re* reading in (3), whereas SE can be modeled as a *de dicto* reading in (4).

(3) *DE RE* READING
Peter knows the complete answer to the question who sang, but he does not know that this is the complete answer. → IE reading

(4) *DE DICTO* READING
Peter knows the complete answer to the question who sang, and he knows that this is the complete answer. → SE reading

Predictions. The *de re/de dicto* ambiguity arises only when there is a clash between the knowledge of the reporter (who is aware that Peter's knowledge is complete) and the knowledge of the subject (Peter). In the first person, reporter and subject are the same person, meaning that there is no distinction between (3) and (4). Thus, sentences like (5) do not show the ambiguity: SE is obligatory.

(5) I know who sang.

We thus predict that, while SE contexts are available both from the 1st and 3rd person perspective, IE contexts should only be acceptable from the 3rd person perspective. We use a truth-value judgment task with a 2 x (Reading: SE, IE) x 2 (Perspective: 1st/3rd persons) x 2 (+/-NEG) design to determine whether this is the case.

References

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