Maximize Presupposition Effects in Haddock-Descriptions

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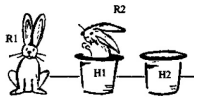
1. Haddock's puzzle: Haddock (1987) pointed out that given a scene like (2) and assuming that speaker and audience are cognizant of its properties the definite descriptions in (1-a) is felicitous as a means of referring to the rabbit that is in one of the hats – despite the fact that there are evidently two hats in the context.

(1) a. The rabbit in the hat is excited.
b. #The excited rabbit is in the hat.

(2) 

Importantly, in (1-b) the definite article on *the hat* is infelicitous. Instead, an indefinite determiner (*a*) is required, suggesting that the visual information alone does not make the relevant hat salient enough to license the uniqueness presupposition of *the hat* in (1-a). Rather, its felicity appears to depend on a particular syntactic configuration – nesting of the Haddock-description (HD) inside another definite, (Champollion&Sauerland'11 (C&S11), Bumford'17 (B17), etc.).

2. HDs as an instance of reference resolution via presupposed content: HDs, we propose, are instances of situational uniqueness definites (e.g. Schwarz'09). Concretely, following Heim'82, we take the to introduce an index i whose value must be given by the assignment g while the NP sister of the contributes a constraint on the values for i in the form of a presupposition, (3).

(3) $[\![\textbf{the}_i]\!]^g = \lambda f\colon f \in D_{\langle e,t\rangle} \,\&\, f(g(i))=1.\ g(i)$

Note that on this construal the does not introduce a uniqueness requirement. Rather (much like free pronouns), using [*the*$_i$ α] obligates the speaker to ensure that the intended referent for [*the*$_i$ α] is recoverable for her audience based on the utterance context and the constraints introduced by α. Crucially, in a nested structure, (1)a, the constraints on referents result in a complex constraint on referents for the larger DP, (4). For non-nested cases, (1)b, however, the constraints project separately and do not yield a complex constraint tied together by the in-relation, (5).

(4) $[\![\textbf{the}_8\ \textbf{rabbit in the}_7\ \textbf{hat}]\!]^g$ = $g(7)$ is a hat & $g(8)$ is a rabbit & $g(8)$ is in $g(7)$. $g(8)$

(5) $[\![\textbf{the}_8\ \textbf{rabbit is in the}_7\ \textbf{hat}]\!]^g$ = $g(8)$ is a rabbit & $g(7)$ is a hat . $g(8)$ is in $g(7)$.

Note that (4) and (5) express the same content, albeit organized differently: in (4) the information to identify the intended referents (that there is a unique rabbit in a unique hat) is presupposed while in (5) it is asserted. To exploit this distinction we need a principle like (6), (Hackl'19).

(6) **Constraint on Reference Resolution:** Presupposed content of an utterance can be used for identifying the extension of referring expressions, at-issue content cannot.

A striking fact of (6) is that it predicts assertions to exhibit Haddock-like licensing of the when a suitable presupposition trigger is added, compare (7) to (1)b.

(7) The excited rabbit is in the hat again.

3. Maximize Presupposition (MP) effects in HDs: We present experimental evidence that HDs exhibit asymmetrical MP effects wrt. the two determiner positions and argue that while C&S11 and B17 predict (different) parts of the observed patter only the present theory can explain all of it.

3.1 Experiments 1-2: We designed a binary, forced choice sentence completion task on two sentence types ($Assertion$, (8), or $Haddock$, (9)) describing a scene as in (10). For each sentence, participants had to choose between $\{the/a\}$ in one of two positions (Pos1, Pos2) with

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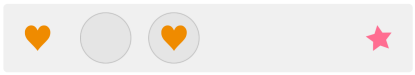
the determiner in the other position being set to *the* in Experiment 1,3 and to *a* in Experiment 2,4. **Experiments 3-4** were identical to Experiments 1-2 with the exception that (8)a,b included the presupposition trigger *back*.

(8) a. Jack put {the/a} orange heart (back) inside the/a circle.
b. Jack put the/a orange heart (back) inside {the/a} circle.

(9) a. Jack colored {the/a} heart inside the/a circle orange.
b. Jack colored the/a heart inside {the/a} circle orange.

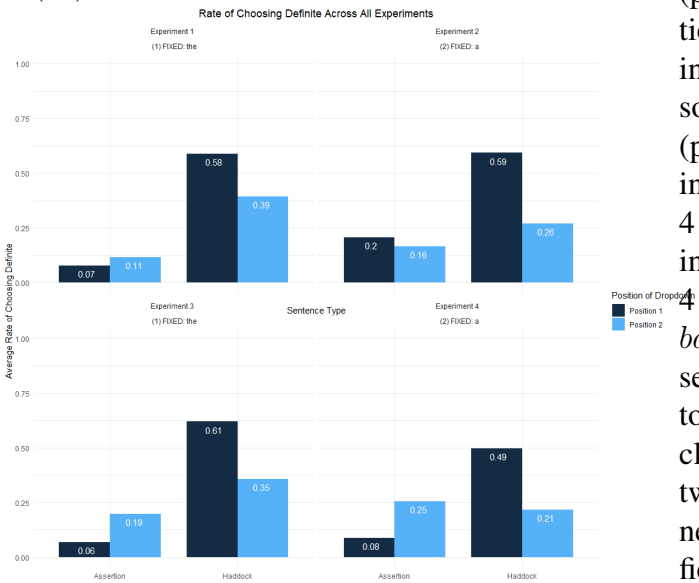
(10)



Participants saw 6 instances of each combination of Sentence Type and Position (24 total target items per experiment) together with 28 filler and 12 attention check items presented via a custom script run on UPenn's PC-IBex platform. Participants (n = 165; ≈ 40 for each experiment) were recruited via *www.prolific.co*.

3.2 Results: Figure (11) summarizes the results plotting rate of *the* choices across our four conditions for Experiments 1-4.

(11)



Lme-logit modelling reveals significant ($p \leq .5$) Sentence-Type x Position interactions for each experiment with *the* choices increasing for Haddock sentences but less so in Pos2. We also observe significant ($p \leq 0.5$) 3-way interactions when comparing Experiment 1 and 3 / Experiment 2 and 4 due to a marked increase of *the* choices in Pos2 for assertions in Experiments 3 and 4 which contain the presupposition trigger *back*. **3.3 Discussion**: (8)a,b without back serve as baselines: the *in*-relation claimed to hold between the relevant heart and circle is part of the asserted content since the two DPs are co-arguments of *put* and so not nested. Given that uniqueness is not satisfied for hearts or circles in the scene as a whole, *the* is not licensed in any slot and participants should prefer *a* irrespective of the fixed determiner. (9), by contrast, is expected to exhibit differential preferences depending on the position and nature of the fixed determiner: For (9)b and the determiner in Pos1 set to the, speakers can optionally construe *the* as situational uniqueness definite. In that case the presupposition is parallel to (4). Its competitor *a* would yield a weaker presupposition ($g(8)$ is a rabbit & ∃x[x is a hat & $g(8)$ is in x]) and so would be blocked by MaxP. However, since *the* is ambiguous in English, speakers also have the option to **not** construe *the* as situational uniqueness definite. Doing so yields a preference for *a* since uniqueness is not satisfied for circles in the scene as a whole. Thus, we predict optional MaxP effects in this case – consistent with our higher rates of *the* choices compared to its baseline. For (9)a, by contrast, both construals of *the* are licensed (there is exactly one circle with an orange heart inside). Thus we predict "stronger" MaxP effects, evident in our data by yet higher rates of *the* choices. Finally, while (part of) this pattern is consistent with C&S11 and B17, neither expects our data in Experiments 3,4 indicating that assertions behave more like HD when an additional presupposition trigger (*back*) is introduced.