Understanding the Meaning Enrichment of Weak Definites*

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Abstract. Sentences containing weak definites typically carry more information than what is conveyed by the straightforward composition of their constituents. We discuss the pragmatic-semantic properties of these meaning enrichments. We compare them with other types of meanings, and show that they are conventional, detachable, non-defeasible, at-issue, but reinforceable, and, to some extent, calculable meanings. We argue that, as such, they should be treated as part of the asserted meaning of a sentence. We present the results of a series of experiments carried out in Dutch in order to obtain more empirical evidence for determining the nature of these meaning enrichments.

Keywords: weak definites, enriched meanings, types of meanings.

1 Introduction

So-called *weak definites*, illustrated in (1), are expressions that, in contrast to regular definites (2), do not refer to uniquely identifiable individuals [4]. As a consequence, these constructions systematically allow sloppy readings in VP-ellipsis constructions:

(1) *weak definites*
    Lola went to the hospital / the doctor / the store and Alice did too.
    (Lola and Alice could have gone to different hospitals/doctors/stores.)

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In addition to non-unique reference, weak definites display a range of other special properties. One of these is the incapacity to keep the weak reading when they are modified:

(3) modified definites
Lola went to the old hospital / the old doctor / the old store and Alice did too.
(Lola and Alice must both have gone to the same hospital/doctor/store.)

Another peculiarity is that sentences with weak definites typically convey two types of information. One of them, the literal meaning, is evidently determined by compositional mechanisms [18]. The other one, the enriched meaning, although linked to the former one, does not seem to be derived just by combining the meanings of the words constituting the sentences. See the examples below.

(4) Lola went to the hospital.

\[ \text{literal meaning} = \text{Lola went to a hospital}. \]
\[ \text{enriched meaning} = \text{Lola went to get some medical services}. \]

(5) Lola went to the store.

\[ \text{literal meaning} = \text{Lola went to a store}. \]
\[ \text{enriched meaning} = \text{Lola went to do some shopping}. \]

This paper focuses on enriched meanings (EMs). In particular, it discusses their pragmatic-semantic nature, which so far has not been well-studied and which needs to be understood in order to determine the most appropriate semantics for weak definites.

This paper is structured as follows. Section 2 discusses the status of EMs based on a battery of tests traditionally used in the literature to distinguish among different types of meanings. Section 3 presents the results of a series of experiments carried out to assess the nature of EMs. Section 4 provides a general discussion.

2 Discussing the pragmatic/semantic nature of EMs

To determine the status of EMs, we use some standard properties discussed in the literature, namely, detachability, calculability, reinforceability, defeasibility, and at-issueness. These properties serve as tests to distinguish among different types of meanings such as entailments, presuppositions, conversational implicatures, conventional implicatures, and idiomatic meanings [5,10,7,13,12,15,2].
2.1 Detachability

EMs are conventionally attributed to some verb + DP combinations. If either the verb or the noun in these combinations is substituted by another one that is semantically equivalent, the EMs may not arise:

(6)  
   a. I went to the hospital.  
      EM = I went to get some medical services.  
   b. I entered/drove/ran to the health center/clinic/sanatorium/institution  
      that provides medical treatment for sick people.  
      (EM does not necessarily arise.)

2.2 Calculability

It is unclear whether or not EMs are calculable. Although their conventional nature suggest that we do not infer that a sentence like (4) means that Lola went to get some medical assistance on the basis of Gricean conversational principles, ultimately upon hearing such a sentence there must be a reasoning towards the EM, probably motivated by world knowledge. Interestingly, world knowledge is also involved in the inference of those conversational implicatures that [12] calls I-implicatures, for example, that John had a drink implicates that John had an alcoholic beverage. The correspondence between these inferences and EMs needs to be better determined in future work. A crucial difference that has to be taken into account is that conversational implicatures, but not EMs, are defeasible (see section 2.4).

2.3 Reinforceability

EMs can be stated explicitly next to their corresponding sentence without causing redundancy:

(7)  
   a. I went to the store to do some shopping.  
   b. Jason went to the hospital to get some medical services.

2.4 Defeasibility

EMs do not appear to be vulnerable to cancelation. Adding material that cancels the EM turns the definite phrase in question into a specific one:

(8)  
   a. Lola went to the store but not to do some shopping but to pick up a friend.  
   b. Lola went to the hospital but not to get any medical service.

1 Given the subtlety of these judgments and their relevance for determining to what extent EMs are similar to I-implicatures, they deserve further, systematic, confirmation.
2.5 At-issueness

EMs are susceptible to direct affirmation or denial (9). Following [19], we take this as evidence that they are propositions that address the question under discussion [17]:

(9) a. A: Lola went to the store yesterday.
   B: That’s not true. There isn’t any milk in the fridge.

b. A: Lola went to the hospital yesterday.
   B: I don’t think so. She is still very sick and it seems that she hasn’t done anything about that.

2.6 EMs and other types of meanings

The examples above have shown that EMs are detachable (6), doubtfully calculable, reinforceable (7), non-defeasible (8), and at-issue (9) meanings. Table 1 compares this behavior with that commonly attributed to entailments (E), presuppositions (P), conversational implicatures (CvI), conventional implicatures (CI) [6,7,8,9,5,10,12,14,15,16,2,19]. This comparison also includes idiomatic meanings (IM), which behave as entailments except for their detachability.

<table>
<thead>
<tr>
<th>Type of meaning</th>
<th>E</th>
<th>P</th>
<th>CvI</th>
<th>CI</th>
<th>IM</th>
<th>EM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculability</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>?</td>
</tr>
<tr>
<td>Detachability</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reinforceability</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>Defeasibility</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>At-issueness</td>
<td>✓</td>
<td>✓</td>
<td>✓/✓</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 1. Properties of EMs compared to other types of meanings.

We conclude from this comparison that EMs cannot be straightforwardly reduced to either Es, Ps, CvIs, CIs, or IMs. EMs differ from Es in being detachable and reinforceable. Furthermore, without attributing an enriched semantics to sentences with weak definites (see Section 2.7), it is not easy to defend that

2 Following the proposal in [19] that only propositions that are not-at-issue can project, an obvious way to test at-issueness would be to embed sentences like (4) under operators like negation or modals and see whether the corresponding EMs survive. However, the results would be trivial because by embedding we would also suspend the truth of the proposition corresponding to the literal meaning of the sentences, which typically must be true in order for EMs to be true (e.g. that *Lola went to do shopping* typically can be true only if Lola went to a store). Thus, EM would not be able to survive anyway but this would not indicate anything about whether or not they are at-issue:

i) Lola didn’t go to the store. (Negation)

ii) If Lola went to the hospital, I’m worried. (Antecedent of conditional)

iii) Perhaps Lola went to the store. (Epistemic modal)
EMs, just like regular Es, are necessary logical consequences of the main proposition conveyed by the sentences. EMs also contrast with Ps because the former but not the latter are reinforceable and at-issue. EMs, although maybe calculable, display two important differences with respect to CvIs, namely non-cancelability and detachability. Likewise, EMs contrast with Cls in that they are reinforceable and at-issue. Finally, EMs differ from IMs in being reinforceable. Furthermore, EMs, unlike IMs, typically need the literal meaning of their sentence to be true in order for them to be true.

2.7 Theoretical implications

Given the properties of EMs and the differences with other types of meanings, the question that remains then is how EMs should be classified. The possibility to treat them as truth-conditional meanings, specifically suggested by their non-defeasibility and at-issueness, although problematic given that they are reinforceable and maybe calculable, is consistent with the approach to weak definites proposed in [1]. In this account, weak definites refer to kind individuals that are instantiated when they combine with object-level predicates. They do so by means of a lexical rule that lifts object-level relations to kind-level relations, and incorporates the stereotypical usage of the kind $U$ into the logical form of the resulting constructions. Under this approach, a sentence like (10a) denotes the set of events in which Lola, the agent, is approaching a location. That location is a realization of the hospital kind, by virtue of by virtue of the Carlsonian realization relation $R$, which fulfills in that event its stereotypical function [3]. Through the relation $U$ the hospital kind $H$ is associated with a set of events in which hospital instantiations function in ways that are stereotypical for $H$:

(10) a. Lola went to the hospital.
    b. $\exists e [\text{go-to}(e) \land \text{Agent}(e) = \text{lola} \land R(\text{Location}(e), H) \land U(e, H)]$

3 Assessing the pragmatic/semantic nature of EMs

In search of more empirical evidence for determining the nature of EMs, we conducted the experiment presented in this section. To construct the materials for this study, we also carried out three pretests, which will be described first.

3.1 Pretest 1: Modification and sloppy readings of definites

*Pretest 1* tested sloppy readings for weak and regular definites and their modified counterparts in VP-ellipsis constructions. The purpose of this study was twofold. First, it aimed to confirm experimentally that modification cancels weak readings. Second, this study served to find the most contrasting set of weak and regular definites in Dutch.

*Predictions.* We expected sloppy readings to be accepted more often for weak definites than for regular definites. We also anticipated modification to decrease
the acceptability of the sloppy reading of weak definites. Since the sloppy reading was not supposed to be available for regular definites to begin with, we expected no effect of modification on regular definites. In consequence, we also predicted an interaction effect of type of definite and modification.

Subjects. 122 native speakers of Dutch participated in this experiment.

Materials. 72 items consisting of a VP-ellipsis sentence followed by two different interpretations were used in this experiment. The VP-ellipsis sentence contained either a weak definite (11), or a regular one (12), or a modified version of one of these. The two given interpretations were the strict reading (11b-12b) and the sloppy reading (11a-12 a) of the elided definite. Additionally, a set of control items favoring sloppy readings were included in order to counterbalance a predicted predominance of non-sloppy interpretations in the test conditions (13).

(11) (modified) weak definite condition
Julia ging naar de (sjieke) bank en Adriaan ook.
‘Julia went to the (fancy) bank and Adrian did too.’
‘Julia and Adriaan both went to the same bank.’
b. Julia en Adriaan gingen allebei naar een verschillende bank.
‘Julia and Adriaan each went to a different bank.’

(12) (modified) regular definite condition
Robert ging naar het (sjieke) hotel en Liesbeth ook.
‘Robert went to the (fancy) hotel and Liesbeth did too.’
a. Robert en Liesbeth gingen allebei naar hetzelfde hotel.
‘Robert and Elizabeth both went to the same hotel.’
b. Robert en Liesbeth gingen allebei naar een verschillend hotel.
‘Robert and Elizabeth each went to a different hotel.’

(13) control condition
Julia ging naar de bank in LA en Adriaan ging naar de bank in NY.
‘Julia went to the bank in LA and Adriaan went to the bank in NY.’
‘Julia and Adriaan both went to the same bank.’
b. Julia en Adriaan gingen allebei naar een verschillende bank.
‘Julia and Adriaan each went to a different bank.’

Method. Participants were asked to read each sentence carefully, and then to judge for each of the two given interpretations whether it matched the sentence.

Result. An lmer model revealed a significant main effect for type of definite ($\beta =0.25497$, SE=0.05904, p(MCMC)<.0001), indicating that subjects accepted the sloppy reading more often for weak definites than for regular definites. It also showed a significant main effect of the presence of modification ($\beta =0.83261,$
Meaning Enrichment of Weak Definites

SE=0.05504, p(MCMC) < .0001): the sloppy reading was accepted more often in the non-modified conditions than in the modified conditions. Finally, it showed a significant interaction effect between the type of definite and the presence of modification (β = -0.28230, SE=0.03481, p(MCMC)< .0001), indicating that the effect of modification blocking the sloppy reading was stronger for weak definites than for regular definites. From this pretest a set of weak and regular definites, were selected to be used in the actual experiment.

3.2 Pretest 2: Typical activities and locations

This study identified typical activities associated with nouns referring to locations in order to determine the most suitable items for the actual experiment.

Subjects. 38 native speakers of Dutch participated in this experiment.

Materials. For this test, 36 location nouns were used that were judged to be part of weak (e.g. hospital) or regular (e.g. restaurant) definites according to Pretest 1. They were presented to subjects in a booklet in which each page contained one noun and some empty lines.

Method. Subjects were asked to read each noun, and to list in 30 seconds as many reasons they could think of why someone would go to that location.

Results. Based on overall frequency, we determined for each noun the most typical activity associated with it, and selected the most suitable items for the actual experiment.

3.3 Pretest 3: Typical activities and agents

This study identified typical activities associated with nouns referring to agents in order to determine the most suitable items for the actual experiment.

Subjects. 24 native speakers of Dutch participated in this experiment.

Materials. For this study, 13 agent nouns were used that were intuitively judged to be associated with typical activities (e.g. mailman). They were presented to subjects in a booklet in which each page contained one of the agent nouns in a carrier sentence of the type a typical reason for a [agent noun] to go somewhere is? (e.g. a typical reason for a mailman to go somewhere is?), and some empty lines.

Method. Subjects were asked to read each sentence and then to complete it by writing down as many reasons they could think of for this agent to go to an unspecified location.

Results. Based on overall frequency, we determined for each noun the most typical activity associated with it, and selected the most suitable items for the actual experiment.

3.4 The Experiment: Strength of EMs

Inspired by [11], this study tested the interpretation of sentences describing an agent going to a location, which was expressed by a weak or regular definite, or
by a modified counterpart of either of these (see the examples in (14)–(15)). Both the agent and the location are associated with typical activities which conflict with each other, so that one must override the other. The activity corresponding to the agent presumably constitutes a conversational implicature, which is cancelable. Following the discussion above, the activity associated with the location is argued to be a conversational implicature in the case of regular definites, but an entailment in the case of weak definites. Accordingly, only in the latter case do we expect the agent activity association to be systematically overridden. Furthermore, given that Pretest 1 shows that modification blocks weak readings, comparing the interpretations of modified weak definites and regular definites enabled us to see if EMs are dependent on the weak definite construction (i.e. are part of its semantics), or if they arise independently of the construction they are in (i.e. are a pragmatic inference).

Predictions. We expect subjects to prefer location reasons more often for weak definites than for regular definites. Furthermore, we predict a greater preference for the location reason for weak definites than for modified weak definites. Finally, if EMs are semantic rather than pragmatic meanings, we expect an interaction effect between type of definite and modification, with modification blocking EMs more strongly on weak definites than on regular definites.

Subjects. 62 native speakers of Dutch participated in this experiment.

Materials. We constructed 48 sentences of the type the agent NP went to the location NP, illustrated in (14)-(15). Each sentence contained one of 12 agent definites constructed according to Pretest 3, and one of 12 location weak definites, 12 regular definites, or their modified versions constructed according to Pretests 1 and 2. The agent definites appeared modified in every sentence in order to counterbalance a possible saliency effect of the location noun modifiers.

(14) (modified) weak definite condition
De lange postbode ging naar het (nieuwe) ziekenhuis.
‘The tall mailman went to the (new) hospital.’

(15) (modified) regular definite condition
De lange postbode ging naar het (nieuwe) restaurant.
‘The tall mailman went to the (new) restaurant.’

Twelve filler sentences were also used. Their structure was similar to the test items, but sometimes contained different types of agents, verbs and location nouns. Care was taken to ensure that the fillers would not introduce an overall bias for either the agent reason or the location reason interpretation.

The sentences were presented to subjects in booklets containing 3 sentences of each condition plus 12 fillers. One of the sides of each paper contained the sentences, and the other side contained the question why did he/she do that? plus some empty lines.

Method. Subjects were instructed to read in nine seconds each sentence and to imagine the scene it described. After that, they were asked to describe the scene they had imagined by answering the corresponding question in 18 seconds.
Results. Table 2 shows per type of definite the number and relative frequency of times the location reason interpretation (LRI) and the agent reason interpretation (ARI) were elicited.

<table>
<thead>
<tr>
<th>Type of definite</th>
<th>Type of interpretation</th>
<th>ARI</th>
<th>LRI</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>regular definite</td>
<td>non-modified</td>
<td>93</td>
<td>78</td>
<td>171</td>
</tr>
<tr>
<td></td>
<td>modified</td>
<td>116</td>
<td>57</td>
<td>173</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>209</td>
<td>135</td>
<td>344</td>
</tr>
<tr>
<td>weak definite</td>
<td>non-modified</td>
<td>38</td>
<td>137</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>modified</td>
<td>53</td>
<td>115</td>
<td>168</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>91</td>
<td>252</td>
<td>343</td>
</tr>
</tbody>
</table>

Table 2. Observations per type of definite corresponding to LRI and to ARI.

An lmer analysis revealed a main effect for type of definite ($\beta = 0.3497$, SE = 0.1088, p(MCMC) < .0001), indicating that participants chose the LRI significantly more often in the weak definite condition than in the regular definite condition. However, there was no significant effect of modification ($\beta = -0.1188$, SE = 0.1003, p(MCMC) = .1896), nor was there an interaction effect ($\beta = -0.0009$, SE = 0.1496, p(MCMC) = .9714). Given that these effects did not occur, we cannot confirm our hypothesis that EMs are part of the semantics of weak definite constructions.

4 Discussion

In this paper, we discussed the pragmatic-semantic nature of EMs. We compared them with other types of meanings, and showed that EMs are conventional, detachable, non-defeasible, at-issue, but reinforceable, and, to some extent, calculable meanings. We argued that, as such, they should be treated as part of the semantics of the sentences. This is consistent with the kind-reference approach to weak definites proposed in [1]. To support this claim, we conducted three pretests and one experiment in Dutch.

Pretest 1 tested sloppy readings for weak and regular definites and their modified counterparts in VP-ellipsis constructions. Apart from confirming experimentally that modification cancels weak readings, this study allowed us to identify the most contrasting weak and regular definites. Pretest 2 and Pretest 3 identified the most typical activities associated with nouns referring to locations (Pretest 2) and to agents (Pretest 3). It also enabled us to refine the construction of items for the actual experiment.

The actual experiment tested the interpretation of sentences describing an agent associated with a typical activity going to a location which is also associated with a typical activity, the location being expressed either by a weak definite, a regular definite, or a modified version of these. The results confirmed
our prediction that EMs lead to a greater preference for the location reason interpretation with weak definite sentences than with regular definite sentences. This shows that weak definite EMs are stronger than regular definite EMs. However, we also predicted an effect of modification blocking the location reason interpretation of weak definite sentences, and an interaction effect between type of definite and modification, with modification having a stronger blocking effect on weak definite EMs than on regular definite EMs. Given that these effects did not occur, even though Pretest 1 suggested that modification blocks the weak reading of weak definites, we cannot say that we have substantiated the hypothesis that EMs are part of the semantics of the weak definite construction. The question that arises then is whether on the basis of these results we should opt for the opposite conclusion, namely that EMs are a purely pragmatic phenomenon. Let us discuss this possibility.

The significant difference between weak definites and regular definites together with the absence of any interaction effect between modification and type of definite could be suggesting that the strength of EMs is due to the nouns themselves rather than to the weak/regular definite distinction. That is to say, the lexical semantics of the weak definite nouns trigger world knowledge associations that are just more robust (and harder to override) than those associated with the nouns occurring in regular definite constructions. This is consistent with the intuition that even in the absence of the weak definite construction, from a sentence like *John went to a hospital* it can still be implied that John went there to get medical treatment. If it is the case that the strength of EMs depends on the nouns and not on the weak/regular definite distinction, then the effect of modification in the present experiment is no longer expected, since modification is not supposed to block lexical-semantic features. Furthermore, if the strength of EMs depends on the robustness of the world knowledge associated with the nouns, then it is adequate to consider EMs as pragmatic inferences rather than as asserted propositions [7,12].

Although, given the argumentation above, it is reasonable to think of EMs as pragmatic inferences, we still would like to point out a couple of possible explanations why our experiment might have failed to show what we predicted without this indicating that EMs are not semantic. First, it is possible that modifying the location nouns did block the EMs, but that this effect was dulled by a topicalising effect also introduced by the modifier in the location noun. We attempted to avoid this by modifying the agent nouns as well, but it may be the case that we did not control sufficiently for the type of agent noun modifier we used. We took care to use only modifiers that would not block the typical activity associated with the agent nouns, such as *tall, bald, fat*, but perhaps this resulted in them being too bland to be an effective counterbalance. Second, it might be the case that we were wrong about certain assumptions underlying our experimental design, for instance the assumption that because modification blocks weak readings, it can also block EMs. Maybe the weak definite properties of allowing non-unique reference and triggering EMs are to a certain extent independent of each other. As a consequence, even though the referential property
of the weak definite is affected by modification, it does not necessarily follow that modification affects EMs as well.

Summing up, in this paper we took a first step in investigating the semantic-pragmatic nature of weak definite EMs, confirming our prediction that they are more robust than regular definite EMs. Further research is necessary to expand these results. For example, to test whether EMs arise independently of the definite construction, one possibility is to redo the experiment using the same items but with indefinite constructions rather than definite ones. If EMs are part of the definite construction, we expect a predominance of agent reason answers in both the weak definite and the regular definite conditions. If EMs are a lexical-semantic property of the noun, we predict results similar to those in the present EM experiment. Furthermore, to investigate whether the modifiers that were used had an effect on the descriptive content of the noun they were combined with, a possible follow-up could be a repetition of Pretest 2 and Pretest 3, this time using the adjective-noun combinations that were used in the EM experiment (e.g. asking for typical activities associated with tall mailman or new hospital).

References