

# Experiment 3 analysis

Chris Potts, Ling 130a/230a: Introduction to semantics and pragmatics, Winter 2016

Feb 9

## 1 Overview

### 1.1 Set-up

This handout summarizes the results of a Feb 2 in-class experiment. The materials were displayed on the classroom screen. Participants gave their responses on paper. The materials, response sheets, and raw response tables are available from the class website. 48 students participated.

### 1.2 Design

The experiment itself involved 22 reference games. In phase 1 of the experiment, participants were in the ‘Speaker role’: presented with a scene of three potential referents, participants were asked to try to identify the target referent (boxed) from a highly restrictive vocabulary. In phase 2, participants were in the ‘Listener role’. There were again three referents. Below them was a one-word message from the speaker. The task was to try to identify the speaker’s intended referent based on that message.

### 1.3 Rationale

Simple reference games of this form have been extensively studied (Rosenberg & Cohen 1964; Dale & Reiter 1995; Stiller et al. 2011; Frank & Goodman 2012; Goodman & Stuhlmüller 2012; Bergen et al. 2012; Krahmer & van Deemter 2012; Degen & Franke 2012; Rohde et al. 2012; Vogel et al. 2013; Potts 2013; Smith et al. 2013). My primary goal for these experiments was to test how accessible basic and complex implicatures are for people.

### 1.4 Overview of results

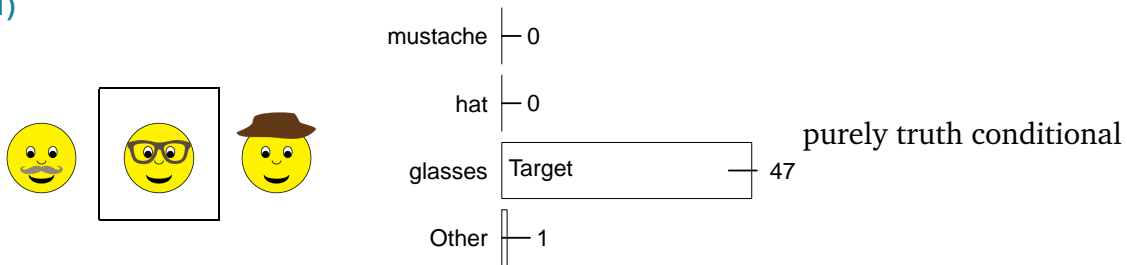
The setting for the experiment was not ideal. Ideally, participants would do the experiment alone, with their own private screen and the ability to control the pace. In addition, one would want to have many more items, to try to control for ordering effects, variability in the nature of the pictures themselves, and other factors that are beyond our control. Nonetheless, the experiment seems to have been successful. The basic implicature pattern was well attested. The complex one was also in evidence, which is unusual to see even in this weak form. In addition, the behavior was highly uniform (in the expected way) on the control items, suggesting that the unusual experimental setting was not a serious hinderance. I have not yet tested for confounds introduced by the small number of items, but the raw results are available (from the course website) if anyone wants to check that.

## 2 Speaker

### 2.1 Truth-conditional

The target item has just one nameable property true of it. Assuming the bounds of truth conditions, the choice of which message to use in such cases is unambiguous. No substantive pragmatic calculations are required. The results reflect this: essentially all subjects chose the single truth-conditionally appropriate message.

(1)



(2)



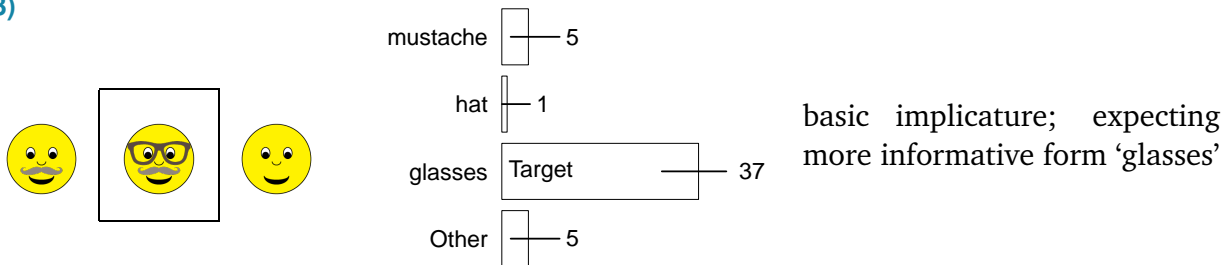
(9)



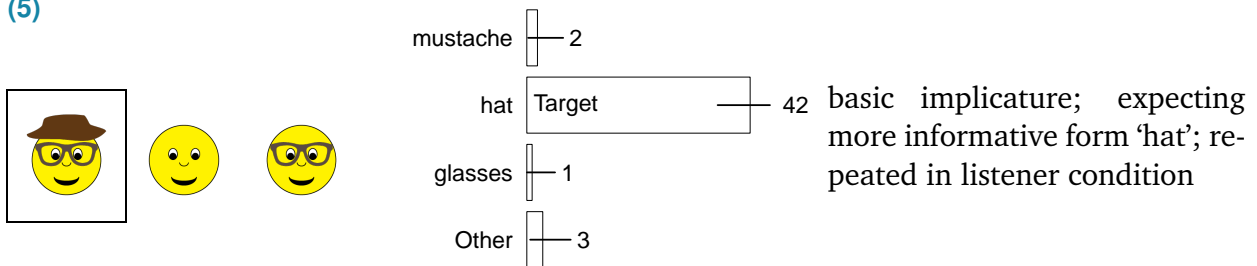
## 2.2 Basic implicature

The target has two properties  $P_T$  and  $P_D$ . Property  $P_T$  is unique to the item, whereas  $P_D$  is also true of one of the distractor referents. In these cases, the message identifying  $P_T$  is the better choice because it fully disambiguates the target from the others. This pragmatic calculations requires participants to reason in terms of the full set of potential referents.

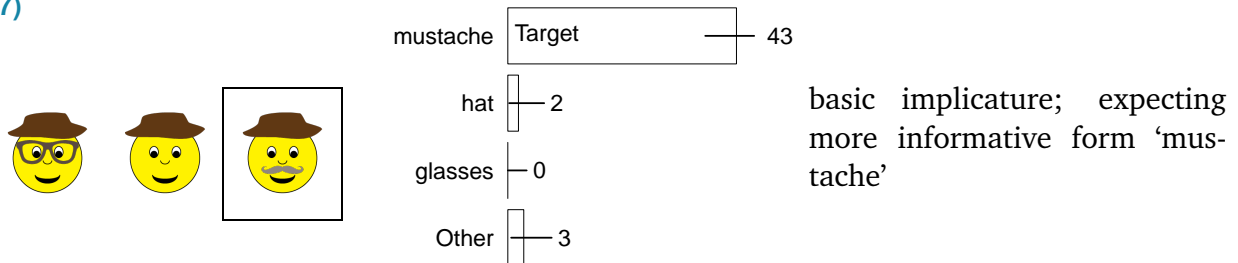
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(5)



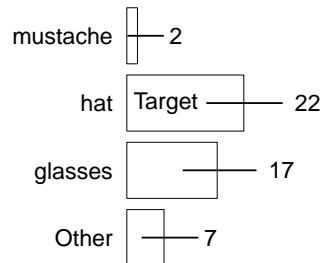
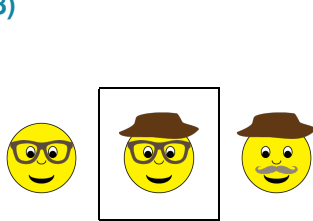
(7)



## 2.3 Complex implicature

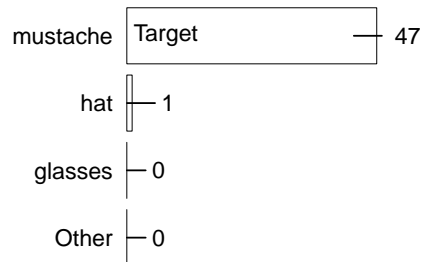
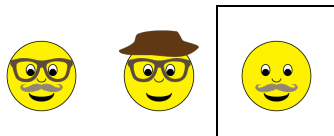
The most intricate speaker condition in the experiment. In this case, it is possible to find an unambiguous message, but doing so requires more extensive reasoning.

(8)



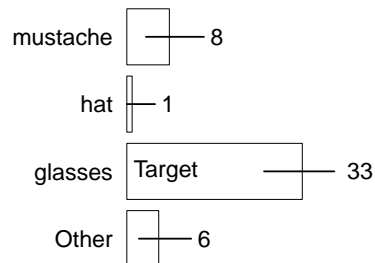
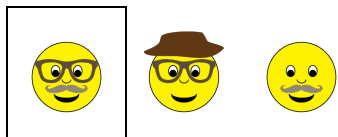
complex ('level 2') implicature;  
theory predicts 'hat'

(10)



purely truth-conditional; ex-  
pecting 'mustache'; prep for  
next item

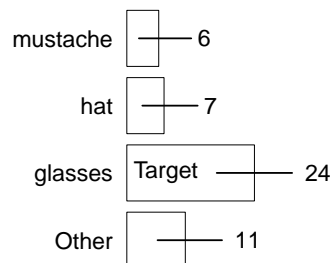
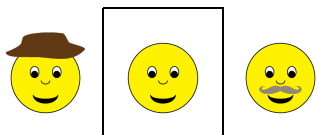
(11)



repeated from previous; com-  
plex ('level 2') implicature;  
expecting 'glasses'; expecting  
higher rate of inference be-  
cause participants might build  
on previous item

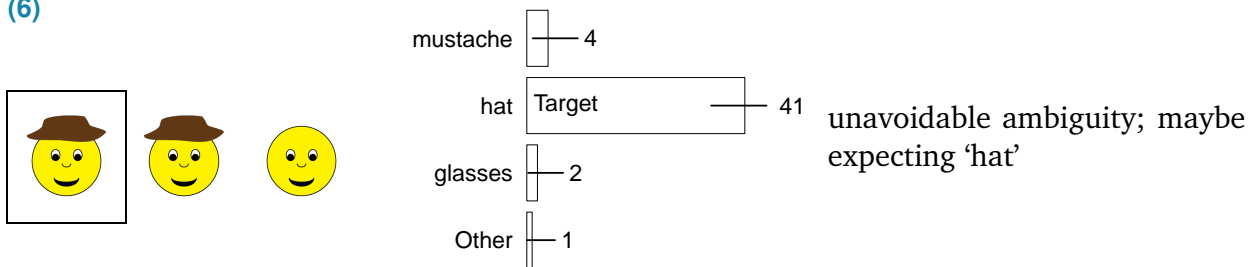
## 2.4 Others

(4)



impossible; maybe expecting  
truth-conditionally anomalous  
'glasses'

(6)

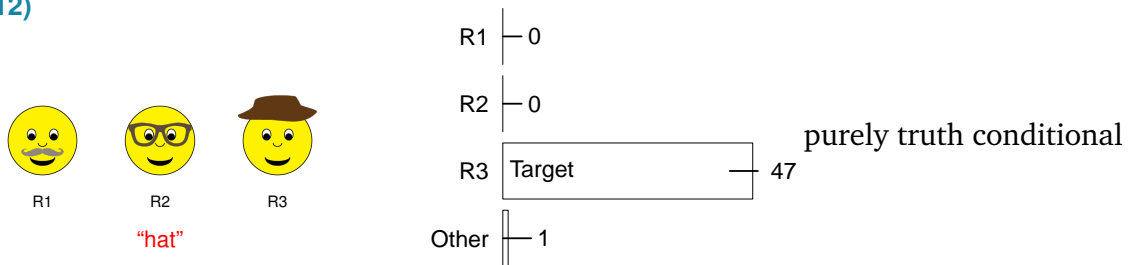


### 3 Listener

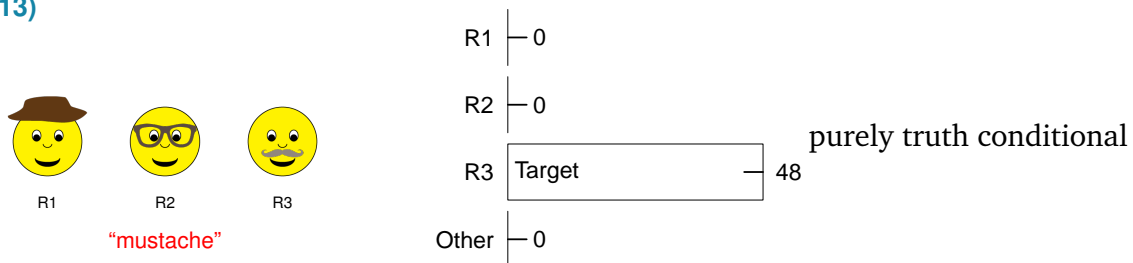
#### 3.1 Truth-conditional

The speaker's message uniquely identified a single referent, so only semantic reasoning was required.

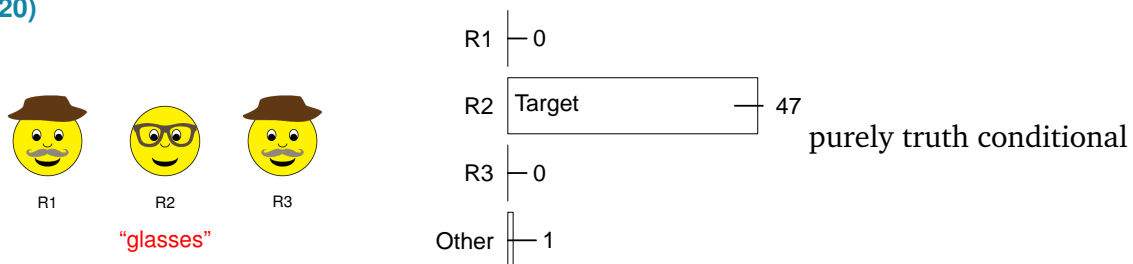
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(13)



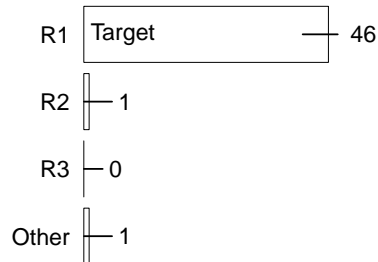
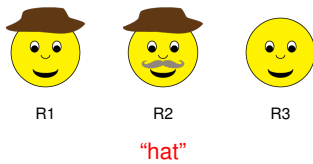
(20)



### 3.2 Basic implicature

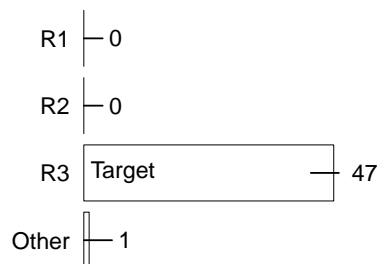
The speaker's message is true two referents. However, one of them possesses only the property mentioned, whereas the other one has the mentioned property and another nameable one. The expected Gricean pattern is that the cooperative speaker will use the specific term iff it is appropriate (by quantity). Thus, where he uses the general term, the specific one must have been ruled out (by quality).

(14)



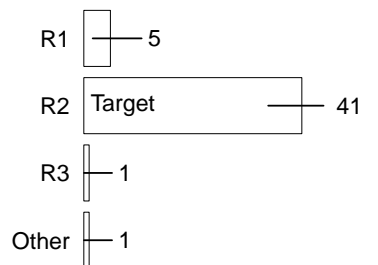
basic implicature; expecting 'R1' because 'R2' could be 'mustache'

(16)



basic implicature; repeated from speaker condition; expecting 'R3' because 'R1' could be 'hat'

(18)

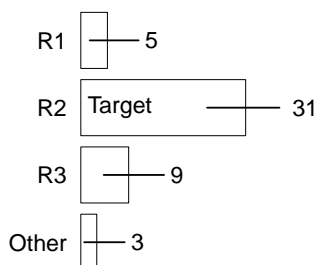
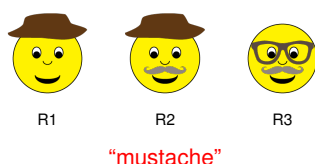


basic implicature; expecting 'R2' because R3 could be 'mustache'

### 3.3 Complex implicature

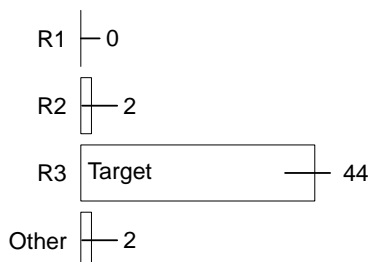
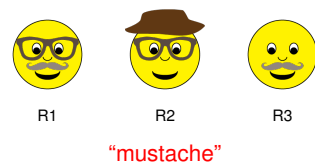
In the complex pragmatic listener condition, the speaker's message is true of two referents. However, the pattern is more complex than in the previous case. Here, the target item possesses a second property, and this property is true of another entity nameable only by the name of that property. The expectation is that a cooperative speaker will use it only where the specific term is ruled out. However, in the current scenarios, the target referent has a second property. This property would uniquely identify a distractor. To rule it out as a choice, the hearer must reason about that competition as well.

(19)



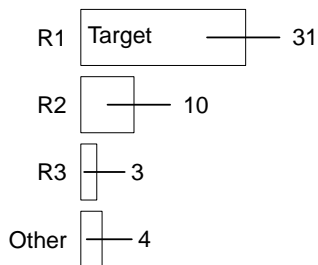
complex ('level 2') implicature; expecting 'R2' because R1 is 'hat' and R3 is 'glasses'

(21)



basic implicature; expecting 'R3'; prep for next item

(22)



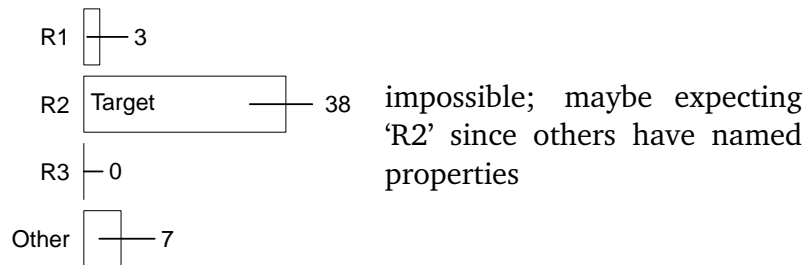
complex ('level 2') implicature; expecting 'R1' because 'R3' is 'mustache' (from previous), creating scalar inference for 'R1' and 'R2'

### 3.4 Others

(15)



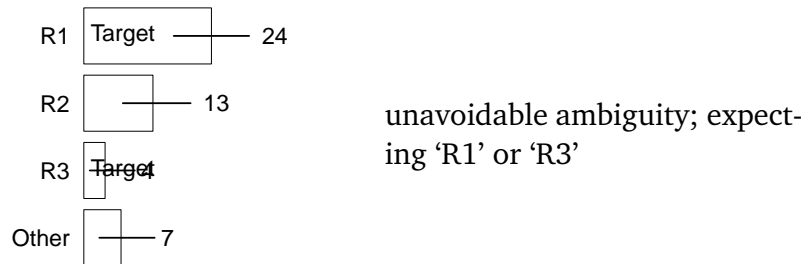
“mustache”



(17)



“glasses”



## References

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