

# Conversational implicature: an overview

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## 1 Overview

- In the early 1960s, Chomsky showed us how to give compact, general specifications of natural language syntax.
- Soon after, philosopher and linguist H. Paul Grice had the inspired idea to do the same for (rational) social interactions.
- Conversational implicatures are the centerpiece of the theory.
- They are of special interest to linguists and psychologists because of the complex ways in which they depend on speakers' understanding of the world, the immediate linguistic context, and each other's intentions.
- The goal of this handout is to review the basic Gricean theory of conversational implicature, identifying important consequences, known problems, and useful extensions/modifications
- One of our goals for this seminar is make sure that all our theoretical discussions are informed by experiments, and vice versa. This handout seeks to do that by finding novel connections between Grice 1975 (theory) and Gibbs and Moise 1997 (experiments).

## 2 The Gricean maxims of conversation

Grice's maxims are the backbone of his pragmatic theory. They are not scientific generalizations in the usual sense. They are more like contractual obligations or laws of the land. If you break one, you don't falsify it. You just generate interesting consequences.

- **The cooperative principle (a super-maxim)** Make your contribution as is required, when it is required, by the conversation in which you are engaged.
- **Quality** Contribute only what you know to be true. Do not say false things. Do not say things for which you lack evidence.
- **Quantity** Make your contribution as informative as is required. Do not say more than is required.
- **Relation (Relevance)** Make your contribution relevant.
- **Manner** (i) Avoid obscurity; (ii) avoid ambiguity; (iii) be brief; (iv) be orderly.

We don't satisfy all these demands all of the time. Grice identified three ways in which this can happen: we might just *opt-out* of one or more maxims, we might encounter a hopeless *clash* between two or more maxims, or we might *flout* ("blatantly fail to fulfill") one or more maxims.

## Missing maxims

- *Politeness*: The pressure to be polite can be powerful — in some situations (and in some cultures), it can overwhelm all the other pragmatic pressures. The first to go is generally “Be brief”; for some reason, being polite and being long-winded go hand-in-hand the world over.
- *Style*: “Be stylish, so be beautiful, distinctive, entertaining, and interesting.” (Davis 2010)

## Variants

- Lewis (1976) defines quality (assertability) in terms of subjective probabilities.
- Joshi’s (1982) quality requires the speaker to model the hearer in order to head-off misleading inferences she might make.
- Horn (1984, 1989, 1996) reduces the maxims to directly opposing principles governing speaker effort and hearer enrichment. See the division of pragmatic labor (def. 3 below).
- Levinson (2000) reduces the maxims to three, also seeking to capture the division of pragmatic labor.
- Relevance Theory (Sperber and Wilson 1995, 2004) seeks to reduce the maxims to just one, though with internal oppositions.
- There have been many attempts to define relevance or explain it away; for a useful recent summary, see Benz 2005.

**And now for something completely different** Coherence-based approaches building on work by Hobbs (1979, 1985) can be seen as offering partial or total replacements for the Gricean framework; see Asher and Lascarides 2003; Kehler 2004; Kehler and Ward 2006; Stone et al. 2007.

## 3 Conversational implicature

### 3.1 Grice’s description

I am now in a position to characterize the notion of conversational implicature. A man who, by (in, when) saying (or making as if to say) that  $p$  has implicated that  $q$ , may be said to have conversationally implicated that  $q$ , PROVIDED THAT (1) he is to be presumed to be observing the conversational maxims, or at least the cooperative principle; (2) the supposition that he is aware that, or thinks that,  $q$  is required in order to make his saying or making as if to say  $p$  (or doing so in THOSE terms) consistent with this presumption; and (3) the speaker thinks (and would expect the hearer to think that the speaker thinks) that it is within the competence of the hearer to work out, or grasp intuitively, that the supposition mentioned in (2) is required. (Grice 1975:49–50)

### 3.2 A standard textbook version

**Definition 1** (Levinson 1983:113). S's saying that  $p$  conversationally implicates  $q$  iff

- i. S is presumed to be observing the maxims, or at least (in the case of floutings) the cooperative principle
- ii. In order to maintain this assumption it must be supposed that S thinks that  $q$
- iii. S thinks that both S and the addressee H mutually know that H can work out that to preserve the assumption in (i),  $q$  is in fact required

**Problems** This version just removes some of the hedges in Grice's original prose. Hirschberg (1985:§2) identifies two really problematic aspects of this definition: (i) in crucial places, the agents involved are passivized away ("it must be assumed") or left implicit ("to preserve 1") (p. 20); and (ii) the definition does not fully distinguish conversational implicatures from regular semantic entailments of various kinds (p. 24).

**The guiding idea** Despite the problems, one can make out the guiding intuition: a conversational implicature is an inference that the hearer is *compelled* to make if he is going to continue to maintain that the speaker is cooperative. In turn, it is often possible to derive conversational implicatures by assuming that the implicature is false and then reasoning to a clash with the cooperativity assumption (i).

### 3.3 A more fully specified version

**Definition 2** (Adapted from Hirschberg 1985:§2). Proposition  $q$  is a conversational implicature of utterance  $U$  by agent  $A$  in context  $C$  if, and only if:

- i.  $A$  believes that it is mutual, public knowledge of all the discourse participants in  $C$  that  $A$  is obeying the cooperative principle.
- ii.  $A$  believes that, to maintain (i) given  $U$ , the hearer will assume that  $A$  believes  $q$ .
- iii.  $A$  believes that it is mutual, public knowledge of all the discourse participants that, to preserve (i), one must assume that  $A$  believes  $q$ .

**Note** Hirschberg does not stop here. She argues that we need to insist in addition that the inferences be cancelable, reinforceable, and non-conventional. (Grice seems to assume that these things follow from the definition; see sec. 3.7 below for discussion.)

### 3.4 Examples

#### 3.4.1 Quantity-based

(1) Kyle to Ellen: “I have \$9.”

Implicature: Kyle does not  $>$  \$9.

- a. *Contextual premise*: Both Kyle and Ellen need \$10 for their movie tickets.
- b. *Contextual premise*: It is mutual, public information that Kyle has complete knowledge of how much money he has on him.
- c. Assume Kyle is cooperative at least insofar as he is obeying Quantity and Quality.
- d. Then he will assert what is maximally relevant, informative, and true.
- e. By (a), the proposition  $p$  that Kyle has  $\$n$  for  $9 < n < 10$  is more informative and relevant in this context than the proposition that he has \$9.
- f. Therefore, Kyle must lack sufficient evidence to assert  $p$ .
- g. By (b), he must lack evidence for  $p$  because it is false.

**Comment** The implicature is heavily dependent upon the contextual assumptions:

- If tickets cost \$9, then “I have \$9” is as informative as is required. (e) is false, and the implicature cannot be derived. (Indeed, Kyle’s saying “I have \$10” might be regarded as immodest in such a context.)
- If Kyle has already said that he can’t get some of his pockets open (say, the zippers are broken), then contextual assumption (b) is not true, and we don’t derive the implicature, because (g) doesn’t hold.

**Comment** Once we have calculated the implicature and agreed that it was intended, then we can also conclude that Kyle doesn’t have \$10, \$11, \$12, etc. These are unlikely to be conversational implicatures, though, since they are not relevant in our context.

### 3.4.2 Relevance-based (Grice 1975:51–52)

(2) Ann: Where does Grice live?

Bob: Somewhere in the Bay Area.

*Implicature*: Bob does not know which town Grice lives in.

- a. *Contextual premise* (adapted from Grice's prose): Ann is planning with Bob an itinerary for a holiday in California. Both know that Ann wants to see her friend Grice, if to do so would not involve too great a prolongation of his journey.
- b. Assume Bob is cooperative.
- c. Assume, towards a contradiction, that Bob *does* know which town Grice lives in (the negation of the implicature).
- d. Supplying the town's name would do better on Relevance and Quantity than supplying just the region name, given the goals in the contextual premise.
- e. This contradicts the cooperativity assumption (b).
- f. We can therefore conclude that the implicature is true.

**Comment** Here again the implicature is heavily dependent upon the contextual assumptions:

- If Bob is reluctant to give out personal information about Grice, then we do not reach the implicature, because we can't assume cooperativity.
- If Ann and Bob are planning a trip but have already sworn off going to Northern California, then Bob's answer might contain exactly the needed information, namely, that they won't be visiting Grice. In this case, premise d does not hold, so the calculation doesn't go through. (Grice's "if to do so would not involve too great a prolongation of his journey" even suggests that this would be reasonable in this context, so Ann might feel uncertainty about the implicature.)

### 3.4.3 A complex manner example

For the next example, I believe we need to supplement Grice with the following principle:

**Definition 3** (The division of pragmatic labor; Horn 1984; Levinson 2000). Normal events are reported with normal language. Unusual events are reported with unusual language.

- (3) To show that she is pleased, Sue contracts her zygomatic major muscle and her orbicularis oculi muscle.

*Implicature*: Sue's expressions of happiness are cold, clinical, and robotic.

- a. Assume the speaker is cooperative.
- b. Assume scientific language is associated with being cold and clinical.
- c. There is a shorter, less obscure form, *smiles*, competing with *contracts her zygomatic major muscle and her orbicularis oculi muscle*.
- d. By the Levinson/Horn heuristic def. 3, Sue's smiles must be unusual.
- e. By b (and a theory of connotations!), her smiles are unusual in being cold and clinical.

**Comments** The implicature is highly dependent upon contextual assumptions, and it leans heavily on cooperativity.

- For example, if the speaker is known to be cold and clinical himself, then we do not draw the implicature, because premise (a) is false in the relevant sense.
- Similarly, if the context is that of an anatomy class, then the competition in (c) breaks down.

## 3.5 Non-examples

### 3.5.1 Lexical entailment

- (4)
- a. A: "Was the movie good?"
  - b. B: "It was outstanding!"
    - i. B's response conveys "yes" as a response to the original question, though "Yes" is not encoded.
    - ii. However, this is an entailment rather than an implicature. The only role for the maxims in this calculation is at the level of quality.
    - iii. The meaning is not cancelable.

**Note** We're in something of a danger zone here. We probably *can* push definition 2 so as to include this inference, but then *all* inferences will be classified as conversational implicatures. This is one reason why Hirschberg 1985 extends the definition to explicitly demand cancelability (among other properties).

### 3.5.2 Contextual inference

- (5)
- a. *B said that X* conveys nothing about the speaker's commitment towards *X*, simply because it is possible to say both true and false things.
  - b. However, such statements commonly interact with information in the common ground so as to lead speakers to conclude from such statements that *X* is in fact true. For example, if *B* is a trusted source for *X*-type information, we might infer *X* from such a claim.
  - c. However, the inference that *X* is very unlikely to be a conversational implicature, because we can generally consistently maintain both that the author was cooperative and that he does not endorse it. (This might in fact be the pretense of a journalist who wrote such a sentence.)

### 3.5.3 Implicative verbs

Karttunen (1971) studies implicative verbs like *manage to*, *fail to*, *dare to* (see also Nairn et al. 2006; MacCartney 2009). These verbs contribute two meanings: one related to their complement clause and another relating to their own lexical content. Rough example:

- (6) Bill managed to attend the party.
- a. Bill attended the party.
  - b.  $\approx$  There was a general expectation that Bill would not attend the party.
- (7) Bill condescended to attend the party.
- a. Bill attended the party.
  - b. Bill thought attending the party was beneath him.

Karttunen's use of 'implicature' is related to *conventional implicature*, not conversational implicature. There is no way to derive either of these meanings from general conversational implicatures, because they depend on idiosyncratic facts about the lexicon.

More generally, it is sometimes hard to tell whether a given author intends a given token of 'implicature' to refer to conversational implicatures or conventional implicatures. This is just sloppiness, though; there is no sense in which the terms are interchangeable.



### **3.7 Additional properties**

A variety of other properties are commonly identified. It is sometimes unclear whether they are presumed to follow from the basic definition or constitute an extension of it.

#### **3.7.1 Calculability**

Levinson (2000:3) calls this “The more or less transparent derivation of the inference from the premises that include the assumption of rational conversational activity.” This is certainly intended to be definitional; if a meaning is present but cannot be derived from the maxims, then we have to attribute it to something else (lexical presupposition, conventional implicature, contextual entailment, ...).

#### **3.7.2 Non-conventionality**

In this context, a meaning is conventional just in case it is the result of the arbitrariness of the signs (lexical items, constructions). Thus, I think this is just another perspective on calculability — the inferences should derive, not (solely) from lexical or constructional idiosyncrasies, but rather from pragmatic interactions. Things get much trickier if we consider more abstract conventions of social interaction (Lewis 1969).

#### **3.7.3 Non-detachability**

For implicatures deriving from the information-theoretic maxims — Quality, Quantity, and Relevance — forms do not matter, because the pressures govern only content. We therefore predict that synonymous forms generate all the same implicatures. Manner-based inferences create exceptions to this.

#### **3.7.4 Indeterminacy**

Hirschberg (1985:24) writes, “a conversational implicature is often a disjunction of several possible interpretations of an utterance and is often indeterminate”. This is a consequence of the complex reasoning process involved in deriving implicatures. If there is any doubt about the relevant aspects of the context, the knowledge of the speaker, the speaker’s assumptions about capabilities of the addressee, and so forth, then there will be doubt about the implicatures.

#### **3.7.5 Re-inforceability**

Levinson (2000:15) writes, “It is often possible to add explicitly what is anyway implicated with less sense of redundancy than would be the case if one repeated the coded content”. This is presumably a consequence of indeterminacy: because there is always doubt, it is never totally redundant to explicitly encode the implicature. This is supposed to yield strong contrasts with entailed content, where there is little or no doubt, and thus reinforcement is always redundant (setting aside issues of vagueness and underspecification).

### 3.7.6 Cancelability

Cancelability is the most important and least well understood property of conversational implicature. It is often used to cover three distinct situations:

- *Direct cancellation*: the speaker utters lexical content that entails the negation of the implicature (“Some, indeed all, of the students passed the test.”)
- *Suspension*: the speaker utters lexical content that indicates that she is not committed to the implicature or its negation (“Some, maybe all, of the students passed the test.”)
- *Lack of contextual support*: the context is one in which an expected implicature does not arise. For example, *and* typically implicates temporal ordering, but not for stative predications.

Grice writes as though cancellation were an expected part of his theory of conversational implicatures, but in fact this cannot be right (Hirschberg 1985:27). Grice assumes that conversational implicatures are meanings that the speaker intends to convey. Where the speaker doesn’t intend them, they do not exist. Thus, to fit cancellation into the theory, one must assume that the speaker intends certain implicatures only for the purposes of canceling them, which sounds like the beginning of a very bad theory of intentions.

Hirschberg (1985) concludes that cancellation (i) does not follow from the Gricean definition (even as fixed up in def. 2, and (ii) that it has to be added lest we end up confusing implicatures with regular semantic entailments. As far as I know, no one has ever challenged Hirschberg’s claims, but, sadly, neither have they had much impact on how people talk about implicatures.

## 3.8 Important subclasses of conversational implicature

### 3.8.1 Generalized and particularized conversational implicatures

Grice (1975:56) makes the distinction as follows; the prose anticipates the theory of presumptive meanings developed by Levinson (2000).

I have so far considered only cases of what I might call particularized conversational implicature — that is to say, cases in which an implicature is carried by saying that *p* on a particular occasion in virtue of special features of the context, cases in which there is no room for the idea that an implicature of this sort is NORMALLY carried by saying that *p*. But there are cases of generalized conversational implicature. Sometimes one can say that the use of a certain form of words in an utterance would normally (in the ABSENCE of special circumstances) carry such-and-such an implicature or type of implicature. Noncontroversial examples are perhaps hard to find, since it is all too easy to treat a generalized conversational implicature as if it were a conventional implicature. I offer an example that I hope may be fairly noncontroversial.

To the extent that Grice has a well-defined theory, this distinction has no place in it!

There is currently a lively debate about whether some (or all) generalized conversational implicatures are grammaticized, rather than calculated in the manner that Grice envisioned. Levinson (1995, 2000) argues that many conversational implicatures are default (presumptive) meanings,

calculated by the hearer unless the speaker gives explicit counter-evidence. Chierchia (2004) takes a similar approach, arguing that scalar implicatures are calculated as part of the compositional semantics. Russell (2006) and Geurts (2009) seek to show that the embedded implicatures of Chierchia’s paper can be derived by standard Gricean means. Chierchia et al. (To appear) present what looks to my eye to be a kind of hybrid view, with lots of covert operators at LF but a broadly Gricean take of how those operators conspire to deliver implicatures. The journal *Semantics & Pragmatics* (<http://semprag.org/>) has published a series of papers and commentaries on this issue, by Bart Geurts, Nausicaa Pouscoulous, Emmanuel Chemla, Robert van Rooij, Uli Sauerland, Michela Ippolito, Charles Clifton, and Chad Dube. I think those papers are a good place to go to get a sense for the nature of the debate at present.

### 3.8.2 Scalar implicatures

These are by far the most widely studied kinds of implicature. In particular, this is the class of implicatures that has received the most formal and experimental attention.

**Definition 4** (Scalar implicature). An utterance  $U$  conveys a scalar conversational implicature iff there are alternative utterances  $U'$  that are at least as relevant as  $U$  in the discourse and that are communicatively stronger than  $U$ . (The content of this implicature will depend on the context, the nature of the utterance competition, and other pragmatic factors.)

**Not always epistemic** The usual assumption is that the basic scalar implicature will be that the speaker is not know the stronger form. For example, if Mike says, “Most of my students did well on the exam”, we conclude that he does not know whether all of them did. If we furthermore assume that he is finished grading and remembers the distribution of scores — if we make the *expert assumption* — then we get to the implicature that not all of Mike’s students did well. This is basically a quantity–quality interaction. However, there can be many other reasons. For example, the stronger meaning might be impolite or irrelevant, or Mike might simply be keeping the meaning a secret. In all these cases, the scalar implicature is not epistemic (does not depend on quality).

**Lexical/morphosyntactic** The debate rages on about whether scalar implicatures are derived like other kinds of implicatures or whether or not they depend on explicitly substituting lexical items drawn from pre-defined lexical scales like those at right. We will likely address this later in the term. For discussion, see Gazdar 1979b,a; Hirschberg 19856; Sauerland 2001; Chierchia et al. To appear; Fox and Katzir 2009.

(123) <all, most, many, some, few>  
 <and, or>  
 <n, ... 5, 4, 3, 2, 1>  
 <excellent, good>  
 <hot, warm>  
 <always, often, sometimes>  
 <succeed in  $V$ ing, try to  $V$ , want to  $V$ >  
 <necessarily  $p$ ,  $p$ , possibly  $p$ >  
 <certain that  $p$ , probable that  $p$ , possible that  $p$ >  
 <must, should, may>  
 <cold, cool>  
 <love, like>  
 <none, not all><sup>24</sup>

Figure 1: Lexical scales from Levinson 1983:134.

### 3.8.3 Manner implicatures

These implicatures depend on the specific linguistic forms used. Whereas other kinds of implicature are purely about information content (at least on the pure Gricean view), these call on assumptions about the relative markedness of forms given certain communicative intentions. These implicatures are peripheral until Horn 1984, at which point they became central. Blutner (1998, 2000) inspired a number of attempts to formalize these inferences in broadly decision-theoretic terms. See also Jäger 2002; van Rooy 2003b.

### 3.8.4 Relevance implicatures

The maxim of Relevance says simply “Be relevant”. As I mentioned before, there are many notions of relevance on offer, many of which are connected to decision theory (van Rooy 2004; Benz et al. 2005; Benz 2005). These implicatures are often connected with responses to questions (relevance as relative answerhood; Ginzburg 1996; Roberts 1996; Büring 1999; Büring 2003), but it is fruitful to generalize this to engaging issues, tasks, and goals (Lewis 1969; Clark 1996; Merin 1997; Lewis 1988; Parikh 2001; van Rooy 2003a; Franke 2009).

## 4 Gibbs and Moise’s experiments

To what extent can competent adult speakers distinguish what is said from what is conversationally implicated? (The focus is on generalized conversational implicatures.)

### 4.1 Experiments 1-3 (p. 56, p. 59, p. 61)

#### 4.1.1 Basics

- The stimuli are given in Appendix A. Appendix B shows how they were presented and what choices the participants had open to them.
- The participants were UCSC undergrads, all native speakers of English. There were 30 in experiment 1, 24 in experiment 2, and 32 in experiment 3.

- In experiment 1, the sentences were presented out of the blue:

This experiment examines your understanding of the meanings of what speakers say when uttering certain sentences. Presented below is a list of expressions, each of which is followed by two different paraphrases. We want you to determine what speakers might have said when uttering these sentences. Your task, then, is simply to read each expression and its two alternative paraphrases and circle the letter next to the paraphrase that best reflected what each sentence said. (p. 58)

*Example:* Jane has three children.

- (a) Jane has at least three children, but may have more.
- (b) Jane has exactly three children, but no more than three.

- In experiment 2, the stimuli were identical to those of experiment 1, except that the participants were first given a brief tutorial on the said/implicated distinction:

Participants were first told about the difference between what speakers say and what they implicated using several examples. They were also told that linguists and philosophers who study meaning in language often argue that what a speaker says reflects his or her minimal meaning (e.g., *The door is open* says that “There is one door in the world and it is open” or I have had lunch says that “I have had lunch at least once before in my lifetime”).

*Example:* Jane has three children.

- (a) Jane has at least three children, but may have more.
- (b) Jane has exactly three children, but no more than three.

- In experiment 3, the target sentences were preceded by contexts. The goal of the contexts was to make the expected generalized implicature irrelevant while making some other implicature relevant. A norming study showed that the expected implicatures were in fact prominent.

*Example:* Bill wanted to date his co-worker Jane.

But Bill really didn't know much about her.

Being a bit shy, he first talked to another person, Fred. Fred knew Jane fairly well.

Bill wondered if Jane was single.

Fred replied,

Jane has three children.

- (a) Jane is married.
- (b) Jane has exactly three children, but no more than three.

### 4.1.2 Results

Group	Type	Example	Percent enriched		
			Exp. 1	Exp. 2	Exp. 3
1.	Cardinals	Brian has three cats	0.87	0.78	0.91
2.	Determiners	Brian broke a finger.	0.57	0.59	0.72
3.	Quantifier	Everyone left	0.95	0.91	0.95
4.	Time/Distance	It will take us some time.	0.89	0.81	0.92
5.	Temporal coordination	$e_1$ and $e_2$	0.94	0.90	0.89
Means			0.84	0.80	0.86

Table 1: Experimental results. Note: I am assuming that Table 2 is mislabeled as providing the proportion of “minimal” choices. The prose indicates that the proportions are for the *enriched* interpretations.

### 4.1.3 Commentary

- Of the 5 groups, only 1 and 5 involve clear cases of implicature (but see Breheny 2008; Katsos and Breheny 2008). The others are cases of underspecification, or what Bach (1994) calls ‘conversational implicatures’. (I am open to the idea that we can derive the others as conversational implicatures, but I don’t see how to do it.)
- The design is worrisome. The enriched forms are made highly relevant by the very nature of the task, and thus a proper Gricean would expect participants to gravitate towards them. When we control for this, the prevalence of implicatures goes way down (Geurts 2009). (Gibbs and Moise come close to acknowledging this (p. 61), but they stick with the (in my view) problematic response options.)
- I think no one would endorse the examples included in the instructions for experiment 2, at least not since Partee’s (1973) seminal work on the pronominal nature of tense.
- As footnote 4 acknowledges, the possessive was a very poor choice, since it is so highly underspecified (Partee and Borschev 2001).
- The temporal expressions used in 4 are complex polarity items of an attenuating sort. They might be scalar (Israel 2001), but it’s not clear how/whether they give rise to implicatures.
- In general, I don’t see why such an eclectic group of expressions was chosen.
- In experiment 3, participants were asked to choose between a highly relevant interpretation and an irrelevant one, and they apparently chose the irrelevant one at very high rates. Independently of what one thinks about the theoretical issues, this is puzzling interpretive behavior, especially since the norming study showed that the relevant meanings were highly prominent.

## 4.2 Experiment 4 (p. 63)

### 4.2.1 Basics

- Example stimuli are given in Appendix D. Here is one; unfortunately, all of the stories in the appendix seem to be ones that support minimal interpretations:

*A story supporting a minimal interpretation:* A boy scout troop was doing its civic service by cleaning up the park in the middle of town. The park was a mess and the scouts needs many rakes and shovels to do the job. One scout noted that there weren't enough rakes for everyone and said that two more were needed. The scout master told him to go to the hardware store and ask for Ralph. The master said to the scout Ralph has two rakes.

- Ralph has at least two rakes and is likely to have more than two.
- Ralph has two rakes but no more than two.

- The participants were 28 UCSC undergrads, all native speakers of English.
- The experimenters selected 4 target sentences from each of the 5 groups from experiment. Each one was placed in a textual context. For 10 of the cases, the context supported an enriched meaning, and for 10 of the cases the context failed to support an enriched meanings. (If I understand correctly, no single target sentence appear with both kinds of context.)
- Each subject saw 10 minimal and 10 enriched stories, evenly balanced across the 5 different classes.
- The instructions were those of experiment 1.

### 4.2.2 Results

Group	Type	Example	Type of context	
			Minimal	Enriched
1.	Cardinals	Brian has three cats	0.88	0.11
2.	Determiners	Brian broke a finger.	0.92	0.19
3.	Quantifier	Everyone left	0.87	0.09
4.	Time/Distance	It will take us some time.	0.92	0.13
5.	Temporal coordination	$e_1$ and $e_2$	0.82	0.05
Means			0.90	0.14

Table 2: Experimental results for experiment 4. The proportions given are those for *minimal* interpretations. In general, the results show that people paid attention to context, enriching only where it was relevant to do so.

### 4.3 Relevance of the findings for a broadly Gricean view

Gibbs and Moise (1997:65) write:

We have examined people's intuitions about the difference between what speakers say, or what is said, and what they ordinarily implicate when uttering indicative expressions. Grice and many of his followers have adopted a theory of what is said that fails to acknowledge people's ordinary intuitions about what is said, which has resulted in a well-entrenched theory of conversational implicature. The findings from our studies are clearly contrary to the traditional Gricean view that pragmatically determined aspects of meaning beyond disambiguation and reference assignment are conversational implicatures and not reflective of what is said.

This is a very strong conclusion! It's surprising to read because, on my understanding, the evidence looks like this:

- Experiment 1 seems to be what Grice would have expected given his description of generalized implicatures.
- Experiments 2-3 seem worrisome, but one might counter that the experimental setting made the enriched meaning relevant.
- Experiment 4 seems entirely consistent with the Gricean view, and even seems to nicely support the assumption that implicatures arise only where contextual relevant.
- Slightly later (p. 66), the authors say, "The results of these studies support the arguments of several linguists and philosophers that pragmatics strongly influences our understanding of what is said as well as what is implicated". This seems right to me, an appropriate challenge to simplistic pipeline models that imagine that pragmatic enrichment "applies to" the "output" of semantics.

## 5 Conclusion

With this handout, I sought to convey a sense for the origins and the nature of conversational implicatures. I introduced the experiments of Gibbs and Moise (1997) as an example of a rather direct psycholinguistic investigation of the concept, one that we can learn a great deal from when designing our own experiments.

Going forward, we plan to explore a number of other phenomena and controversies relating to conversational implicatures:

- i. Are conversational implicatures generated by the grammar?
- ii. Is implicature processing fast and automatic or slow and effortful?
- iii. How are "embedded implicatures" computed?
- iv. What is the acquisition course for implicatures?
- v. How does intonation contribute to implicatures?
- vi. How do referential phrases contribute to pragmatic inference?

Please let us know what we should add to this list!

## References

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