Grice's Conversational Maxims

H. Paul Grice (1975, "Logic and conversation." In Cole, P., and J.L. Morgan, eds. *Speech Acts*. New York: Academic Press, 41–58) was interested in the everyday use of logic.

Formal logic embodies a set of axioms that allows lawful deductions.

Formal Logic

For example, a simply syllogism like:

All psycholinguists are clever.

Jim is a psycholinguist.

Implies (makes the implication), that is, allows us to infer (or make the inference):

Jim is clever.

Conversational Logic

If I say,

Can you be quiet?

what inference do you draw?

If a colleague asks me how a student did in class, and I reply,

She always came to class on time and her penmanship was very neat.

what inference do you draw?

WHAT IS THE LOGICAL BASIS FOR THESE INFERENCES?

The Cooperative Principle

Grice suggested that conversation is based on a shared principle of cooperation, something like:

"*Make your conversational contribution what is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged*."

This principle was fleshed out in a series of maxims.

Grice's Maxims

Maxims of Quantity:

1. "Make your contribution as informative as required."
2. "Don't make your contribution more informative than is required."

Maxims of Quality: Be truthful.

1. "Don't say what you believe to be false."
2. "Don't say what you lack adequate evidence for."

Grice's Maxims, cont'd

Maxim of Relation:

"Be relevant."

Maxims of Manner: "Be perspicuous."

1. "Avoid obscurity of expression."
2. "Avoid ambiguity."
3. "Be brief (avoid unnecessary prolixity)."
4. "Be orderly."

Implicatures

These maxims (or, more precisely, their violation) form the basis for inferences that we draw in conversation, which Grice called *implicatures* (to distinguish them from formal logical *implications)*.

Grice asserted that different ways of violating these maxims give rise to different types of implicatures.

How to Violate Conversational Maxims

- "Quietly and unostentatiously"

  I ask, *Do you love me?* And you answer *Yes*.

  (supposing you don't really: quietly violates maxim of quality; hence, a lie – no implicature possible)

- Overtly **opting out** of a maxim:

  A colleague asks, *How is the job search going?* and I respond, *Sorry, that's confidential*.

  (explicit information that maxim of quantity cannot be satisfied, no additional implicature needed.)

How to Violate Conversational Maxims, cont'd

- Coping with a **clash** between maxims:

  Another student asks you, *Where does Professor Morgan live?* and you answer, *Somewhere in Providence*.

  (You know that the student wants to TP my house, but you don't know exactly where I live. To avoid violating the maxim of quality – providing information you know to be untrue – you violate the maxim of quantity – providing less information than was asked for – possible implicature is that you don't know exactly where I live.)

How to Violate Conversational Maxims, cont'd

- **Flouting** a maxim in order to **exploit** it:

Unlike someone who is simply violating a maxim, someone who is flouting a maxim expects the listener to notice.

Flouting the first Maxim of Quality (avoid falsehoods):

A: Tehran's in Turkey, isn't it?

B: Uh-huh, and Boston's in Armenia.

How to Violate Conversational Maxims, cont'd

Flouting the first Maxim of Manner (obscurity):

A: What are you baking?

B: Be I are tea aitch dee ay wye see ay kay ee.

Flouting the third Maxim of Manner (prolixity):

A: I hear you went to the opera last night; how was the lead singer?

B: The singer produced a series of sounds corresponding closely to the score of an aria from '"Rigoletto."

How to Violate Conversational Maxims, cont'd

Flouting the second Maxim of Quantity:

A: What can you tell me about Catherine's ability to concentrate on a task?

B: Catherine is a butterfly flitting from flower to flower.

(invites a metaphorical interpretation)

Flouting the Maxim of Relation (be relevant):

A: What on earth has happened to the roast beef?

B: The dog is looking very happy.

“Conversational implicatures are not tied to linguistic form. To make a conversational implicature, a listener must have already parsed the sentence, assigned it its literal interpretation, realised that additional inferences must be added to make it conform to the Gricean maxim, and determined what these inferences are. Such activity could not reasonably affect the initial steps of parsing.”

(Clifton & Ferreira, 1989)

How is contextual information integrated in sentence processing?

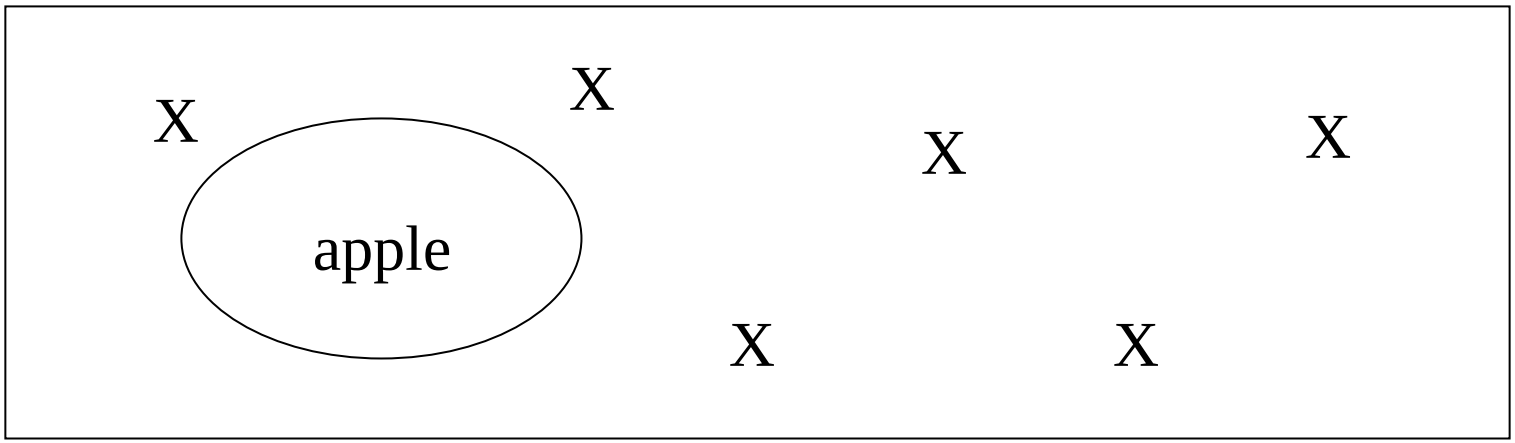
- Conservative hypothesis: *Linguistic knowledge includes mapping relations from linguistic expressions to contexts*
- Radical hypothesis: *Human language processing involves highly automatic inferencing driven by general communicative assumptions*

Version A of the conservative hypothesis:

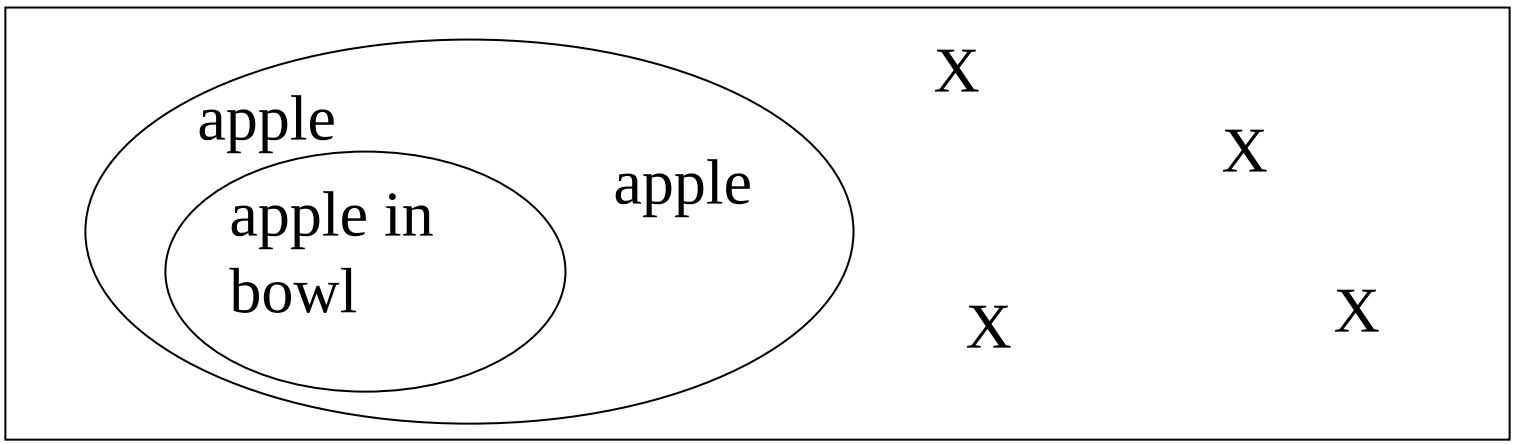
- Constructional presupposition:
  Relationship between a modifier/head noun presupposes discourse contrast

John put the apple in the bowl...

Interpretation A: Referential Phrase "*the apple*"



Interpretation B: Referential Phrase "*the apple in the bowl*"



Other examples of presupposition:

- George has *stopped* snorting cocaine on the job.
  - presupposes George has been snorting cocaine
- Al *knows* that he is unpopular.
  - presupposes that Al is unpopular
- *It was Hilary who* blew the whistle on Bill.
  - presupposes that someone blew the whistle on Bill.

Prediction:

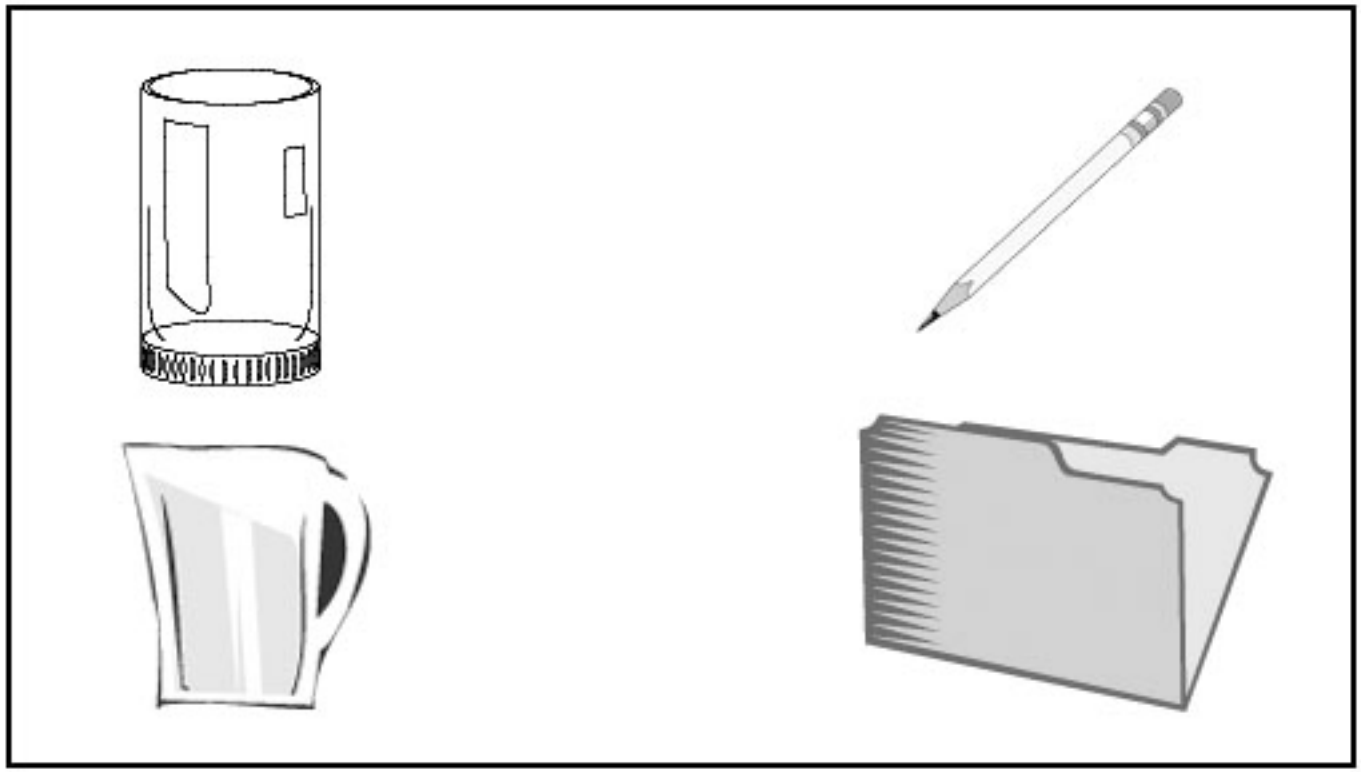
Context effects should be seen with all instances of modification (e.g. prenominal adjectives)

Target Instruction:

"Pick up the tall glass."

TARGET

DISTRACTOR



COMPETITOR

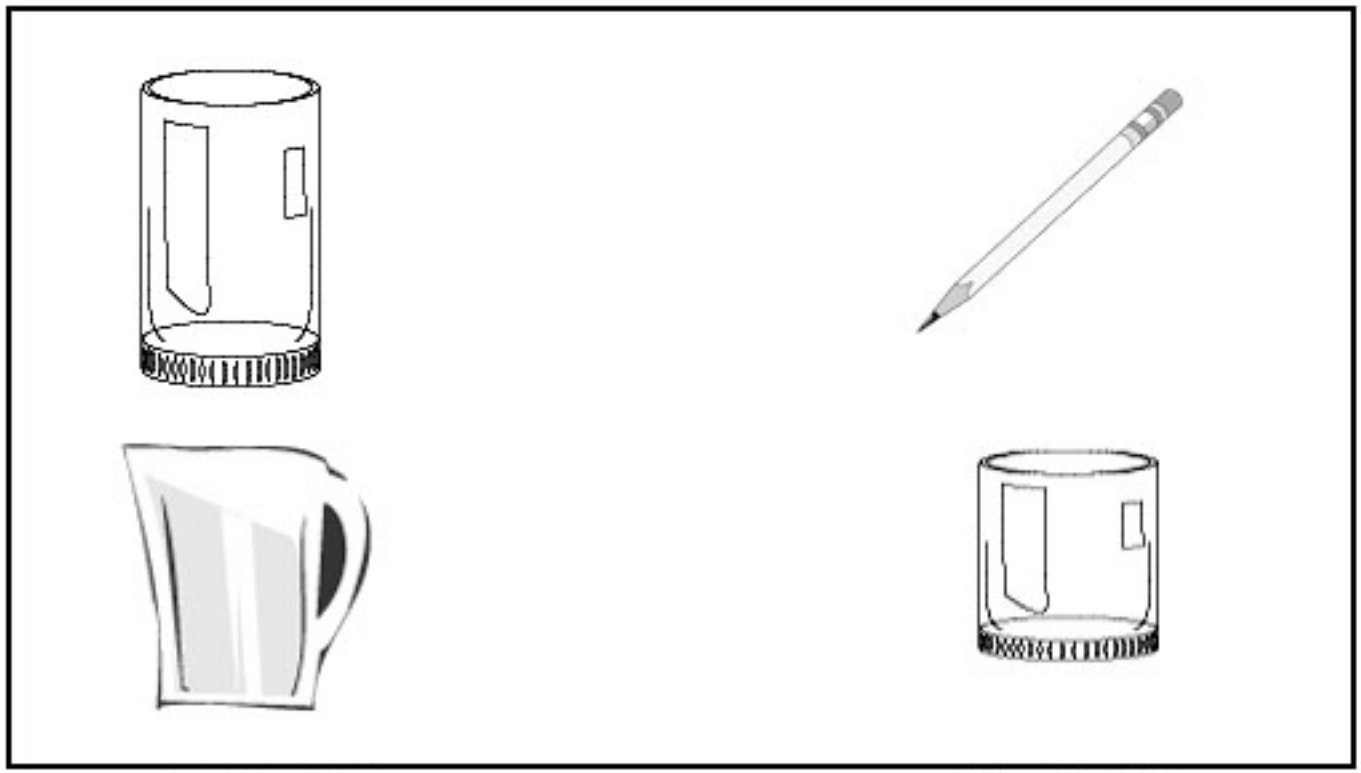
DISTRACTOR

Target Instruction:

"Pick up the tall glass."

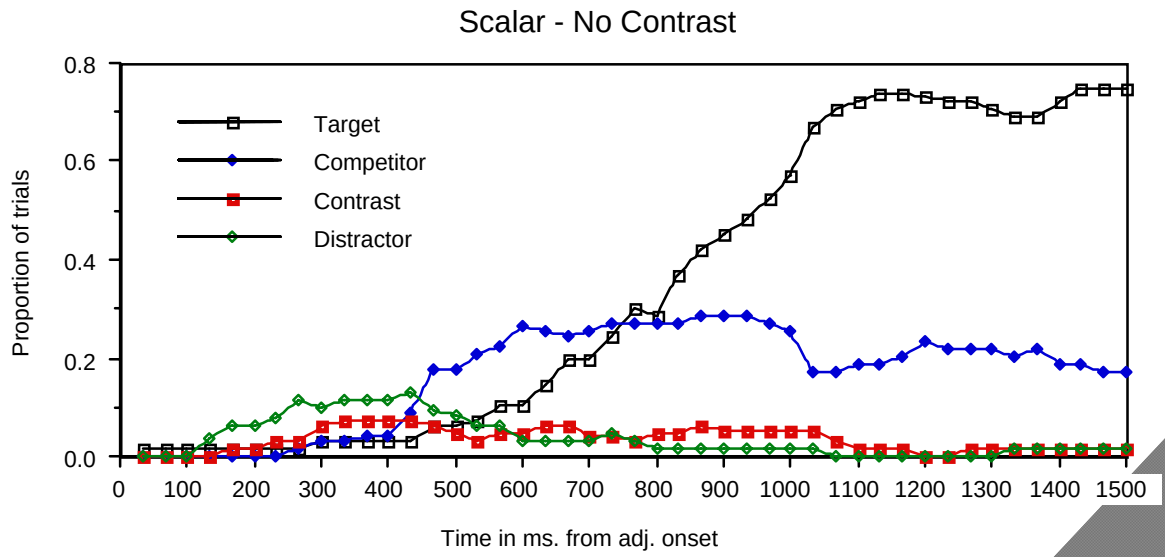
TARGET

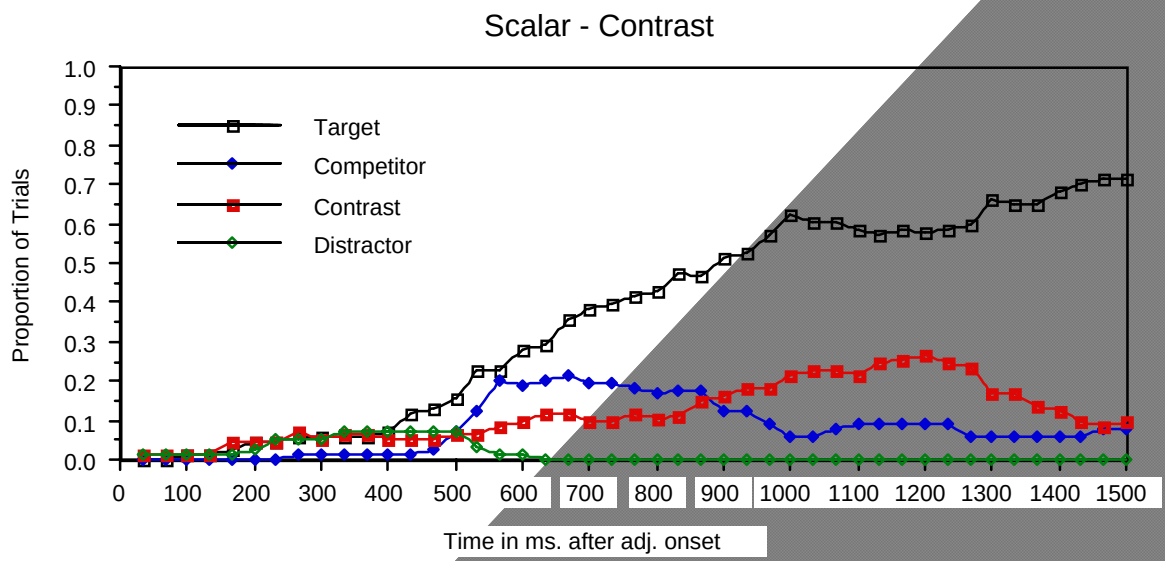
DISTRACTOR



COMPETITOR

CONTRAST


Scalar - No Contrast
Proportion of trials
0.0
0.2
0.4
0.6
0.8
Target
Competitor
Contrast
Distractor
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms. from adj. onset


Scalar - Contrast
Proportion of Trials
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Target
Competitor
Contrast
Distractor
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms. after adj. onset

However:

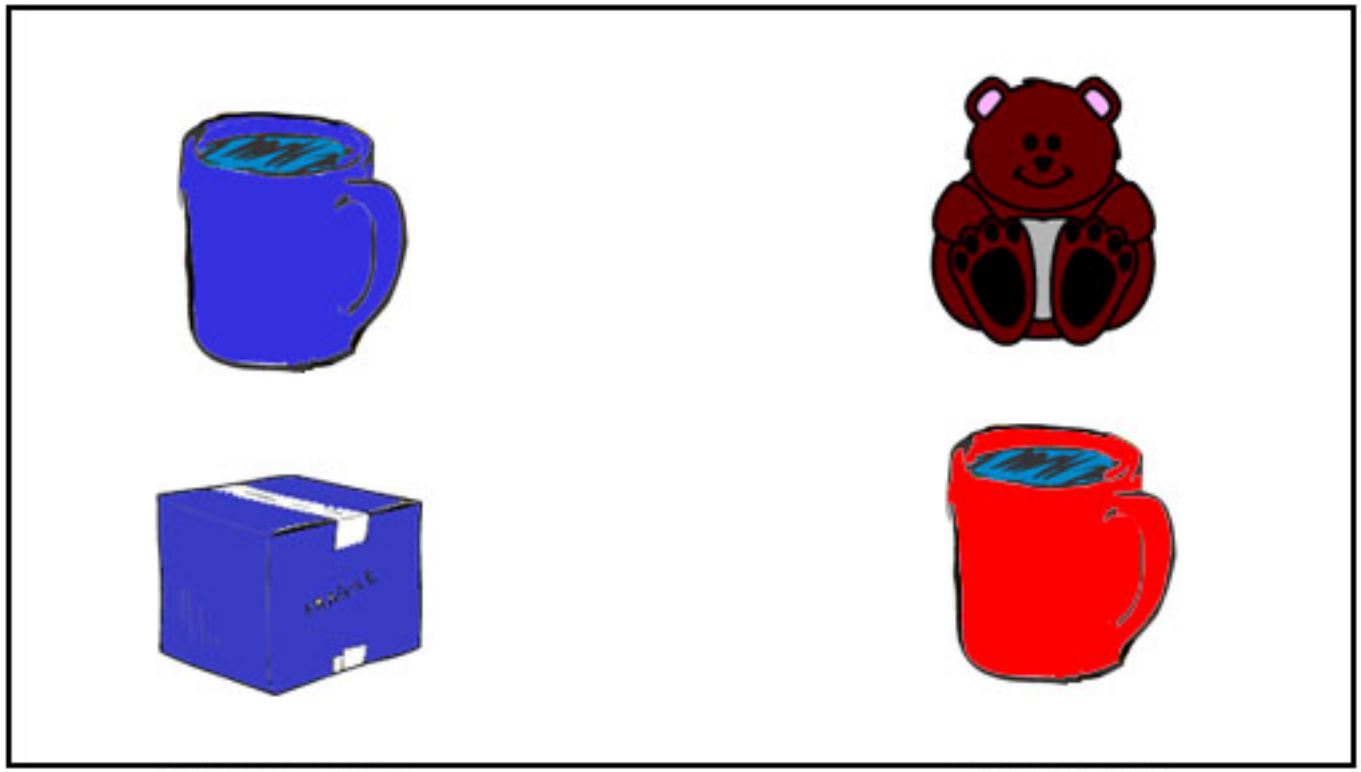
- The same effect of context is not seen with all adjectives
  - interpretation of color adjectives is not sensitive to the context manipulation

Target Instruction:

"Pick up the blue cup."

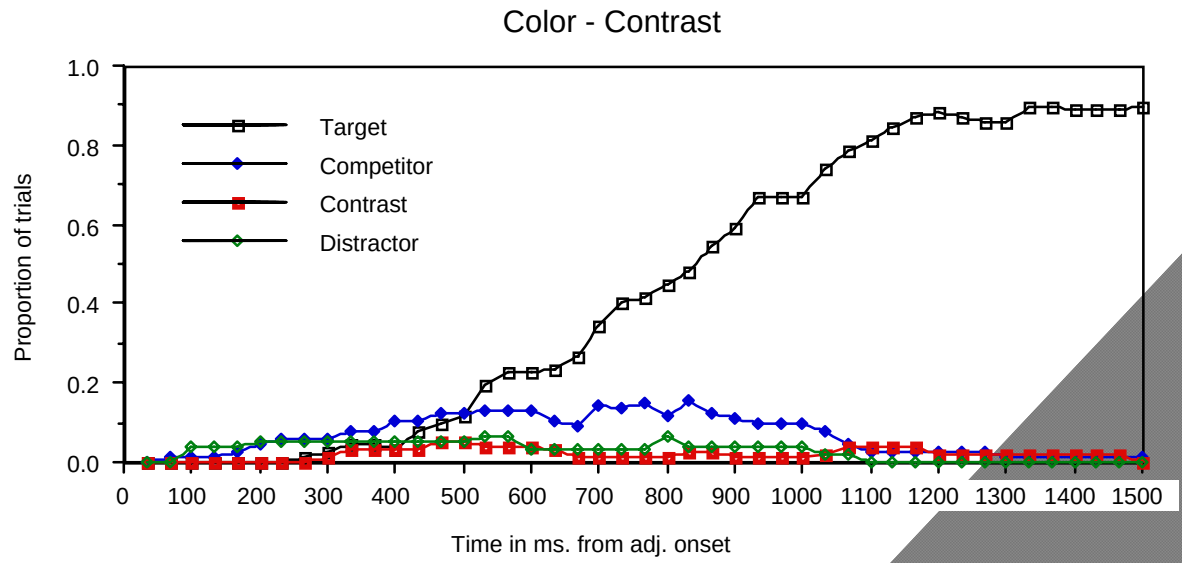
TARGET

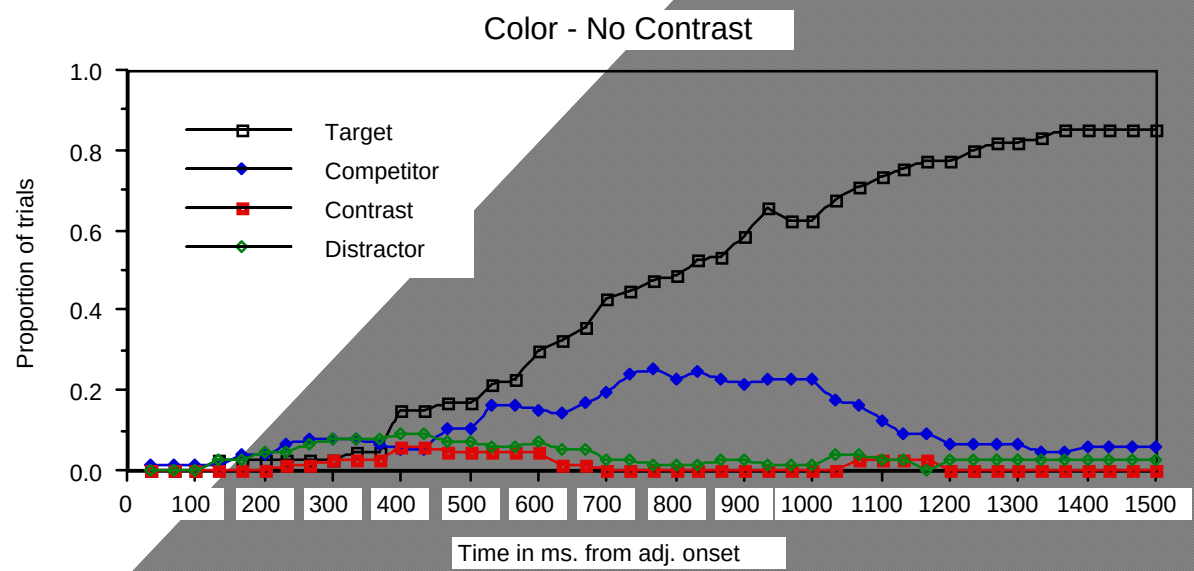
DISTRACTOR



COMPETITOR

CONTRAST


Color - Contrast
Proportion of trials
1.0
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Contrast
Distractor
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms. from adj. onset


Color - No Contrast
Proportion of trials
1.0
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Contrast
Distractor
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms. from adj. onset

Version B of the Conservative Hypothesis

- Lexical semantic underspecification: *Certain adjectives (e.g. scalar adjectives) are semantically dependent on some contextually salient comparison class*

- regular predicates: meaning = link between word and set of entities in a model
- scalar predicates: meaning depends on contextually fixing some free variable
  - *John is tall* : “The value for height that corresponds to John is greater than some norm for a relevant comparison class.”

However:

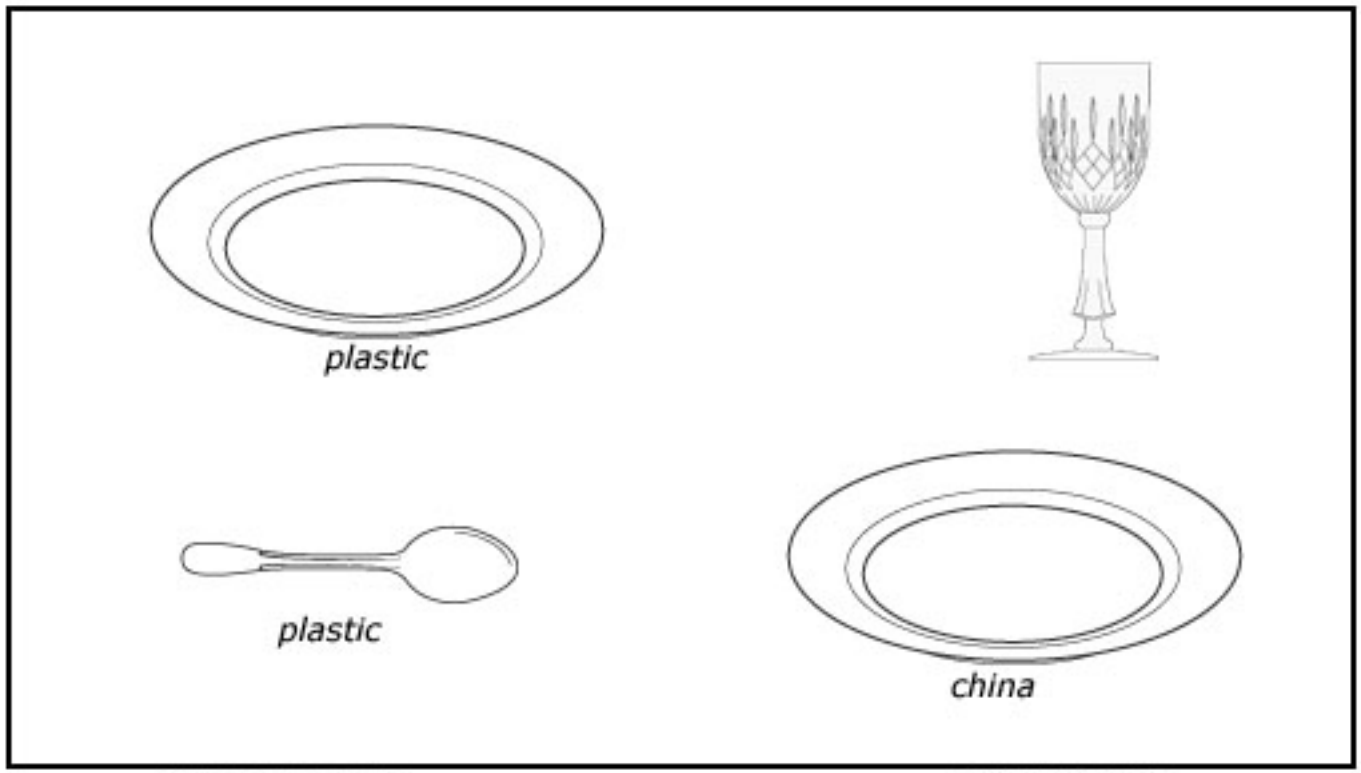
- The context effect *is* seen with some adjectives that are not relational in nature, where underspecification would not drive integration of context

Target Instruction:

"Pick up the plastic plate."

TARGET

DISTRACTOR



COMPETITOR

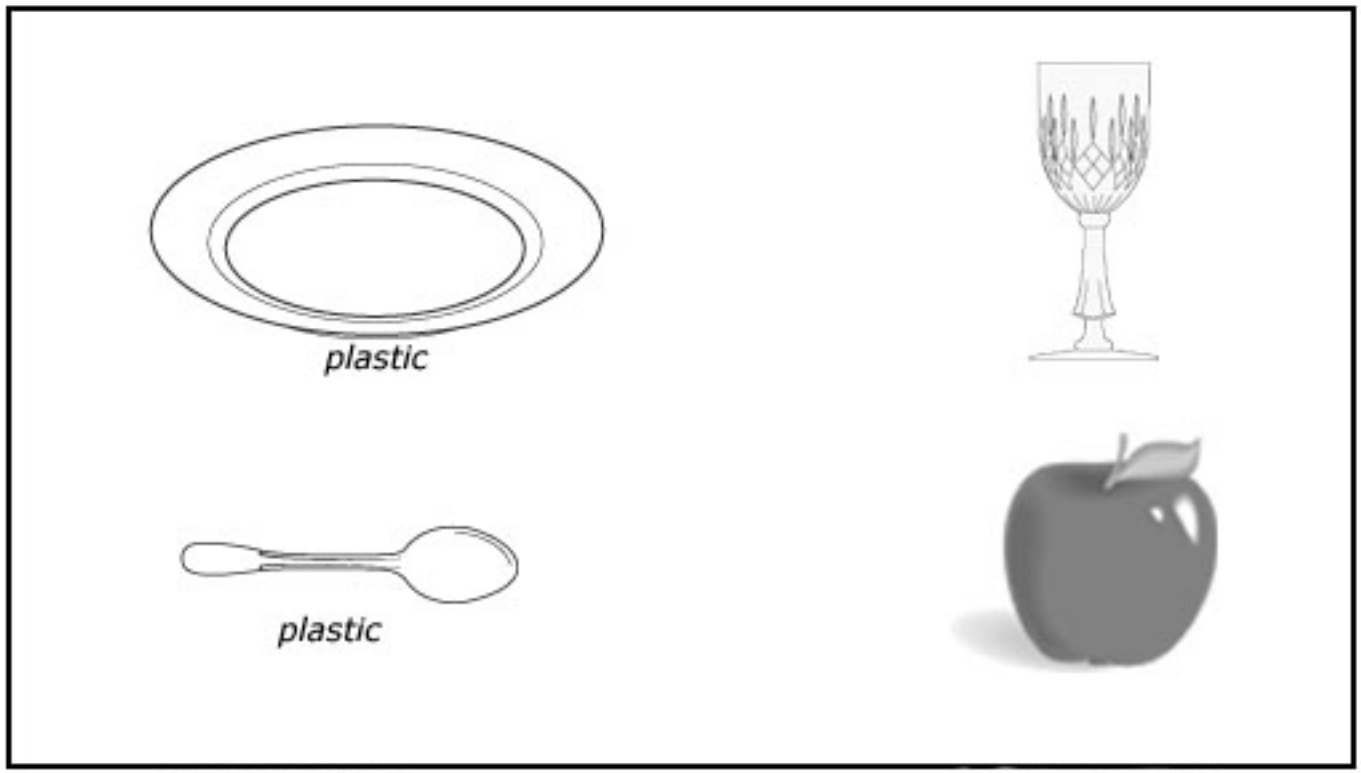
CONTRAST

Target Instruction:

"Pick up the plastic plate."

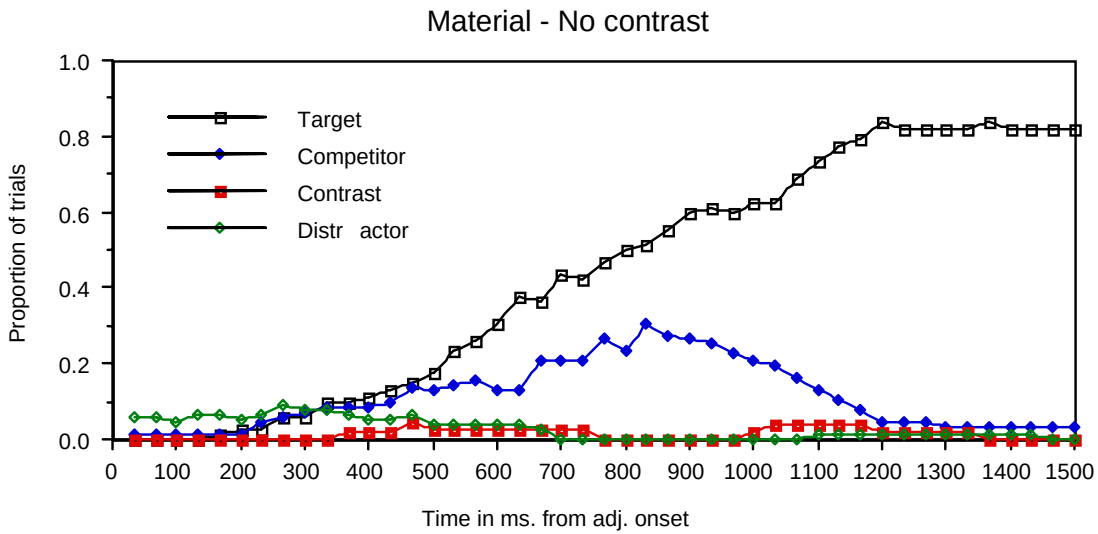
TARGET

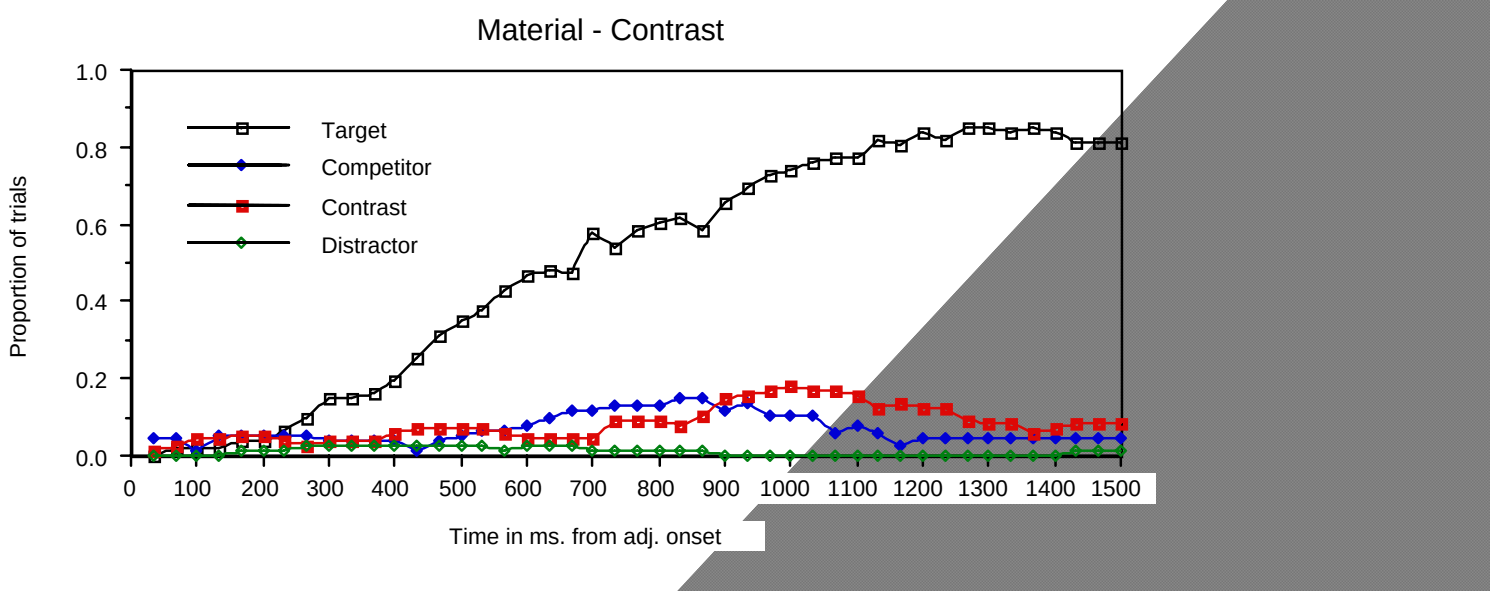
DISTRACTOR



COMPETITOR

DISTRACTOR


Material - No contrast
Proportion of trials
1.0
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Contrast
Distr actor
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500
Time in ms. from adj. onset


Material - Contrast
Proportion of trials
1.0
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Contrast
Distractor
0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500
Time in ms. from adj. onset

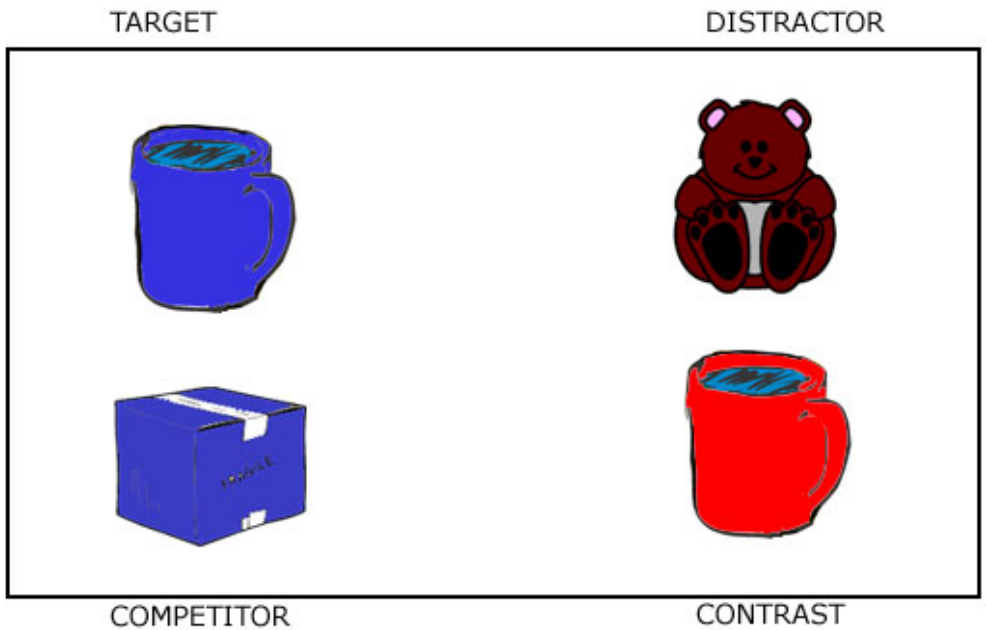
Radical hypothesis:

- Hearers expect speakers to avoid excessive or insufficient information (Grice, 1975)
- In discourse contrast conditions, use of modifier is communicatively motivated for referring to target, but not competitor

What about color adjectives?

Target Instruction:

"Pick up the blue cup."



What counts as “excessive” information?

- Not determined solely by requirements of establishing unique reference
- Determined on the basis of implicit comparisons of alternative expressions against a default

Identifying default expressions:

Spontaneous descriptions in elicited production tasks:

- Color adjectives are frequently used (*40-60% of trials*) even when not required for referential uniqueness
- Scalar and material adjectives are rarely included (*<10% of trials*) unless needed for referential uniqueness

What determines default description for an object?

- Perceptual accessibility or salience
- Linguistic accessibility

- *Informational value of an expression*

Redundancy in noun-noun combinations:

Bagel sandwich

Ham sandwich

Experimental extensions:

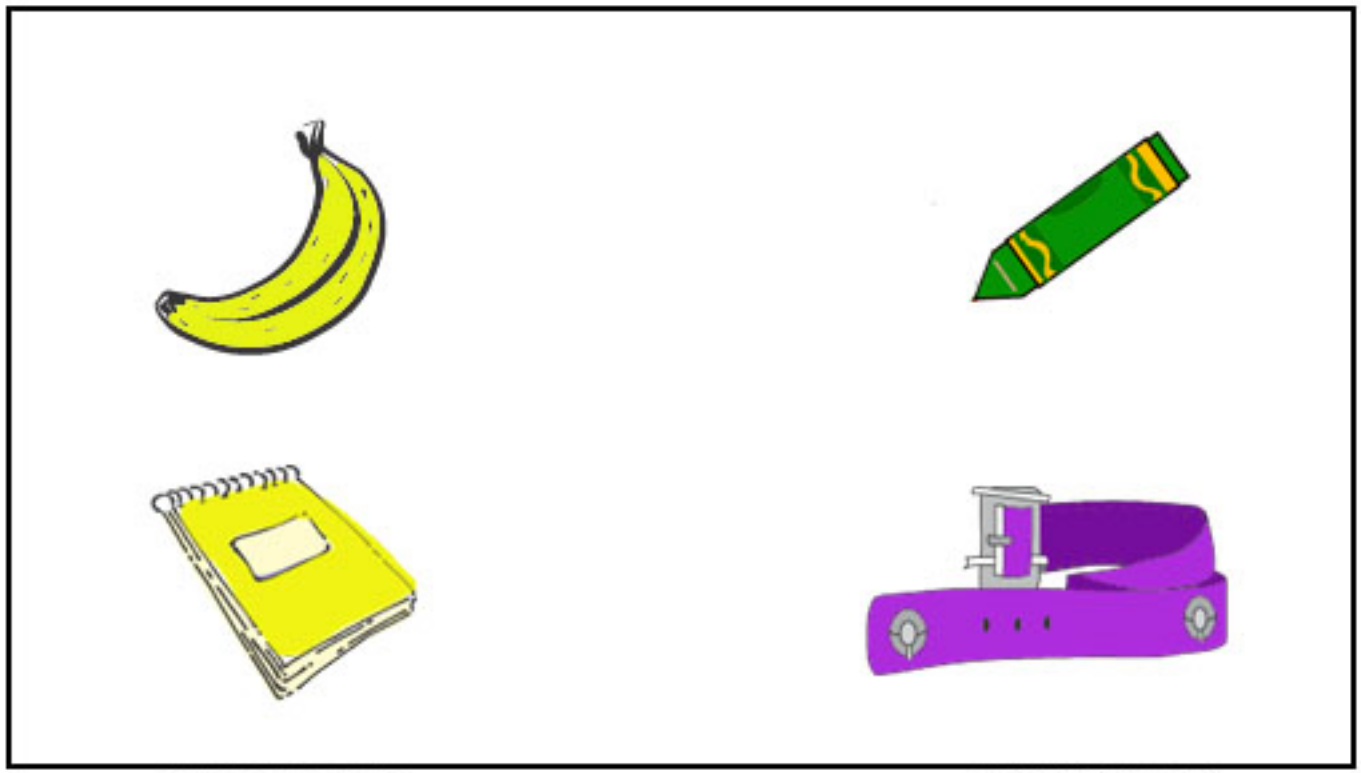
- Can knowledge of redundant properties determine default use of adjectives?
- Can referential context effects in comprehension be linked to this knowledge?

Target Instruction:

"Pick up the yellow banana."

TARGET

DISTRACTOR



COMPETITOR

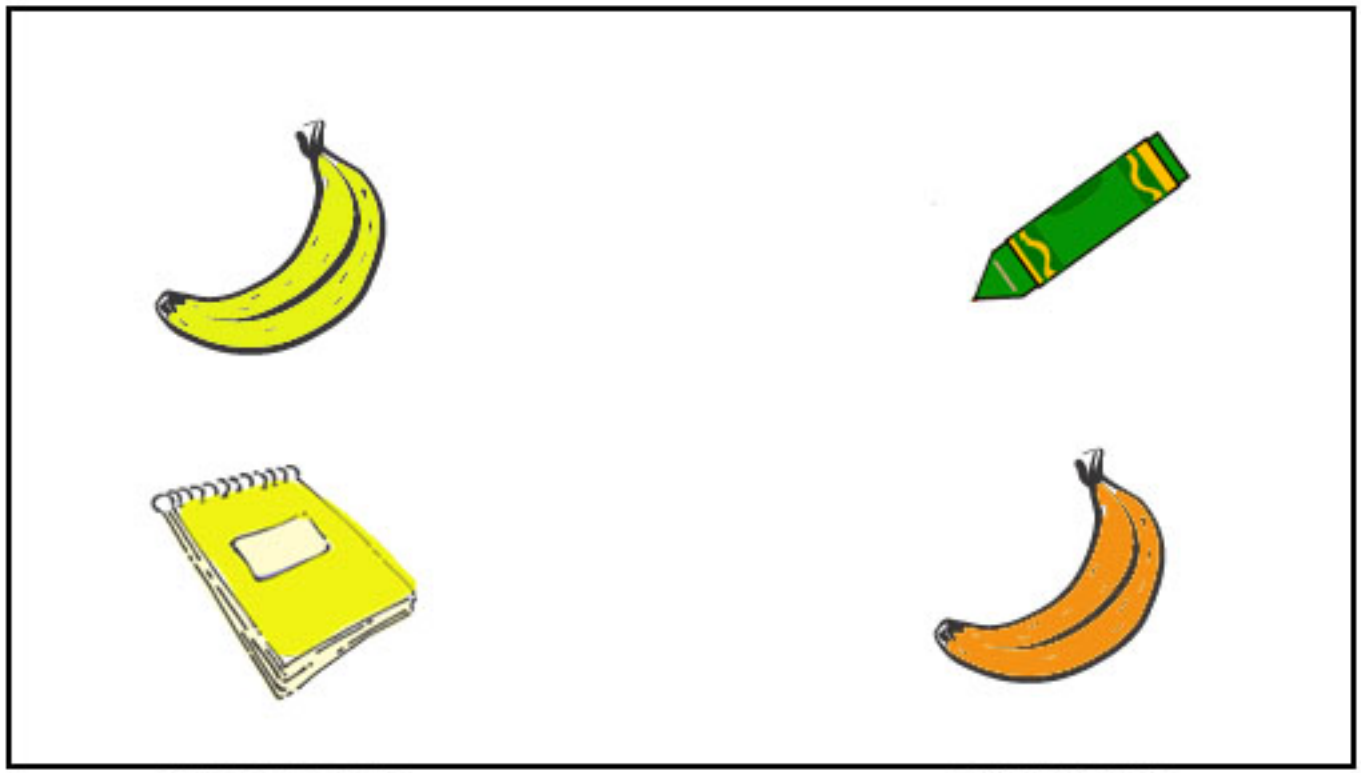
DISTRACTOR

Target Instruction:

"Pick up the yellow banana."

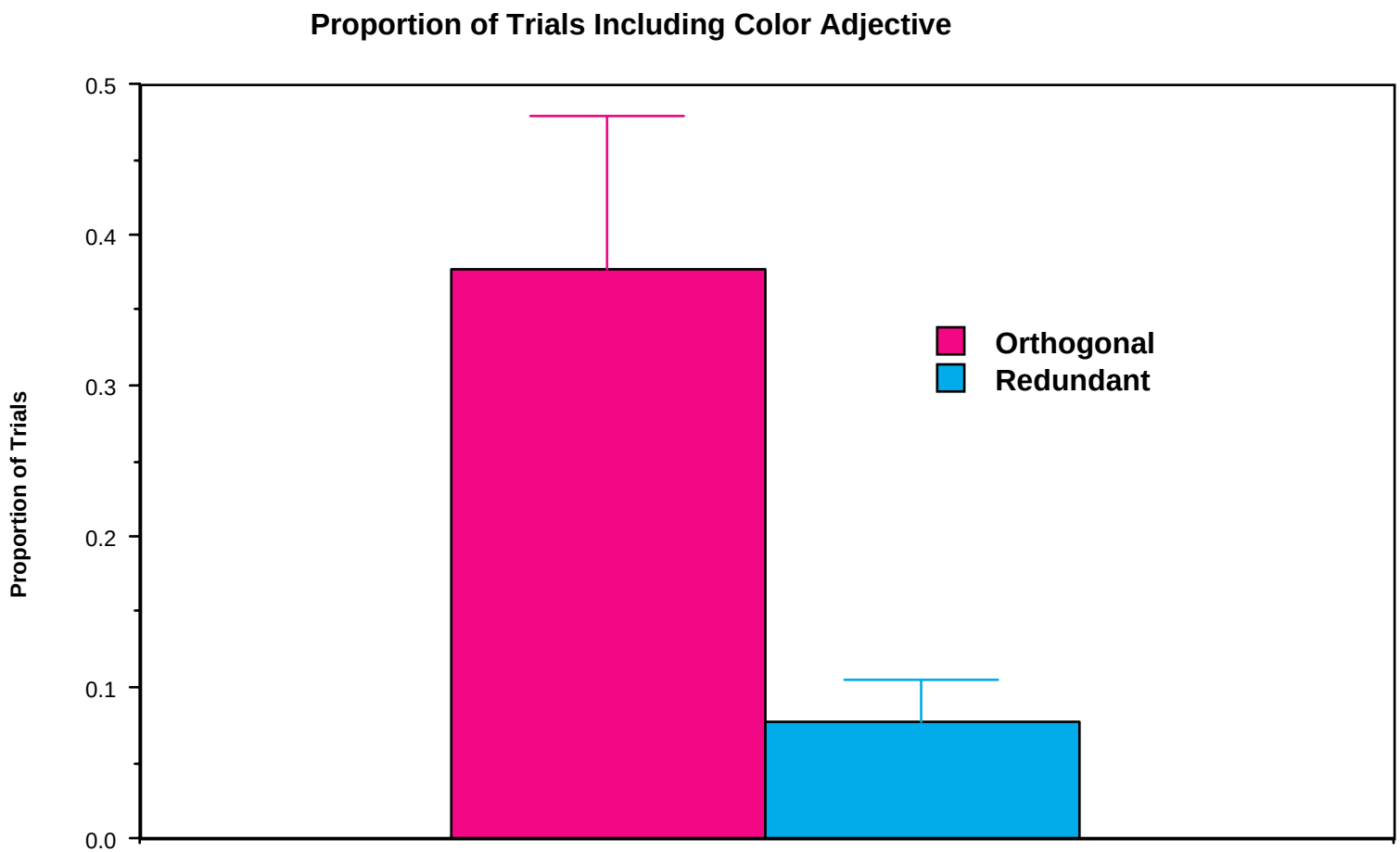
TARGET

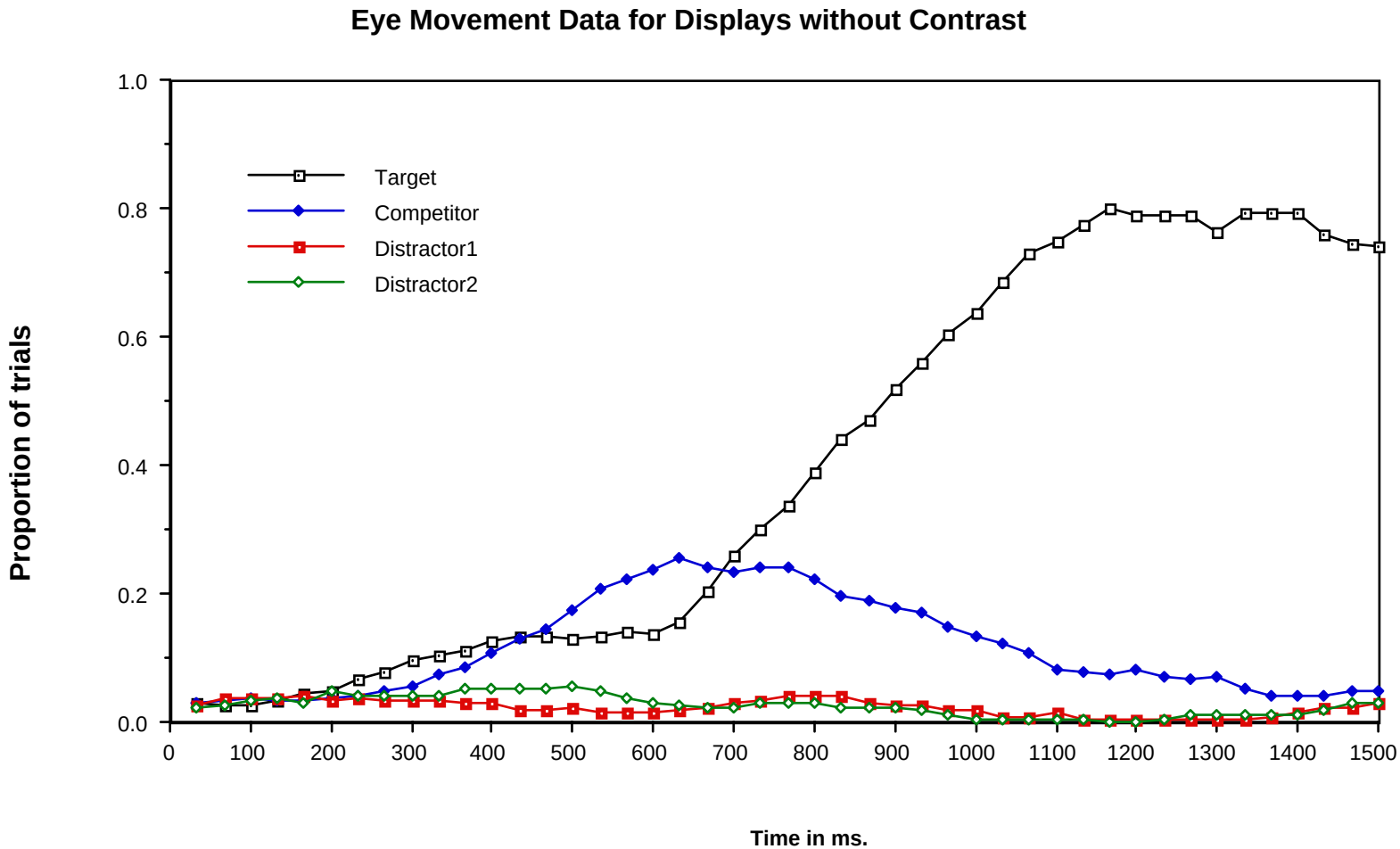
DISTRACTOR

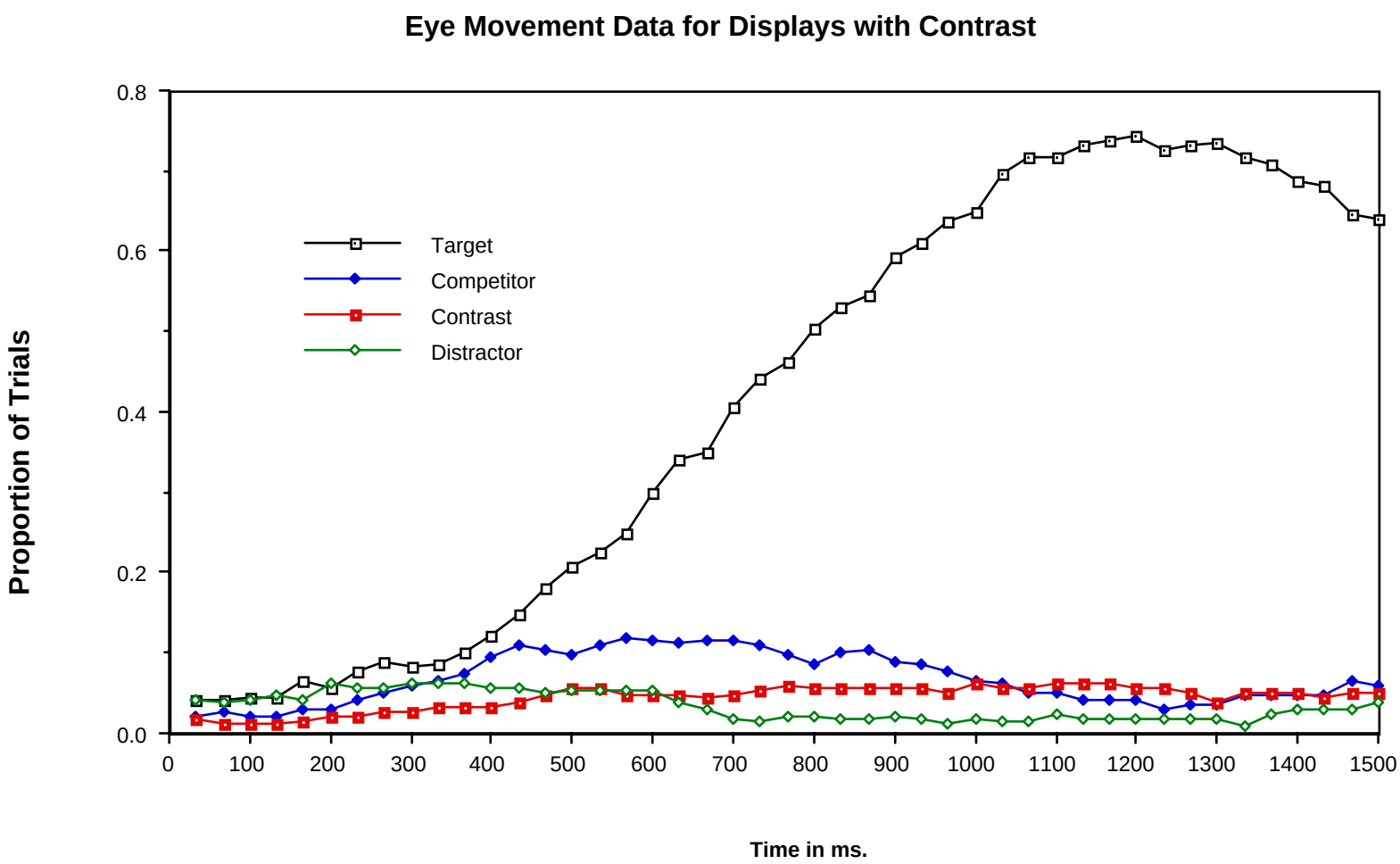


COMPETITOR

CONTRAST


Proportion of Trials Including Color Adjective
Proportion of Trials
0.5
0.4
0.3
0.2
0.1
0.0
Orthogonal
Redundant


Eye Movement Data for Displays without Contrast
Proportion of trials
1.0
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Distractor1
Distractor2
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms.


Eye Movement Data for Displays with Contrast
Proportion of Trials
0.8
0.6
0.4
0.2
0.0
Target
Competitor
Contrast
Distractor
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
Time in ms.

Results and implications

- Referential context effects are sensitive to the informational value of a modifier
  - Further support for general communicative expectations underlying context effects
- Context effects should generalize beyond modified structures
  - Processing of subordinate-level expressions should also show similar sensitivity to context

Conclusions

- Referential context effects cannot be attributed directly to constructional or lexical linguistic properties of modifiers
- Context effects reflect rapid inferences triggered by deviation from default description
- Default descriptions can be predicted in part by informative value of property encoding
- Context effects may extend to non-modified expressions where contrasts in *quantity* of information is involved