

## Background

### Binding Theory

Structural constraints on distribution of reflexives and pronouns:

- a **reflexive** (e.g., *himself*) must find its antecedent in a local domain (D) [Harry, in (1)]
- a **pronoun** (e.g., *him*) must not take an antecedent within D [not Harry, in (1)]

(1) Joe saw Harry's picture of him/himself

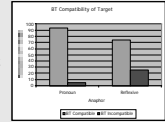
domain (D) where a reflexive must find antecedent and where a pronoun must not

# The Role of Binding Theory in the On-line Reference Resolution of Reflexives

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## Comparison to Pronouns

Since BT treats reflexives in a parallel, complementary way, if BT is an initial filter participants' response choices should adhere to or violate BT at about the same rate for both reflexives and pronouns. This is not the case, suggesting that in addition to BT reflexives and pronouns are sensitive to other constraints that treat them differently.



## Question

How do structural constraints on reference resolution (e.g. Binding Theory) interact with pragmatic and discourse constraints?

## Two Hypotheses

### Initial Filter

Binding Theory acts as an initial filter in on-line reference resolution (Nicol & Swinney 1989).

### Multiple Constraints

Binding Theory is one of several interacting constraints that influence the choice of referent (Badecker & Straub 1992, 1994).

## Predictions

### Initial Filter

BT filters out BT-incompatible referents, so on the reflexive condition the possessor should be the only doll touched and there should be no effect of lead-in either in response latency or in time course of looks; BT-incompatible response choices should be parallel for both reflexives and pronouns.

### Multiple Constraints

Since BT is one of several interacting constraints, BT-compatible referents should be preferred, though context and discourse factors may have effects on reflexives as well as pronouns.

## Summary

- Response (target) choice on reflexive condition is often inconsistent with BT.
- Response latencies on reflexive condition show sensitivity to discourse.
- Time course of looks on reflexive condition shows sensitivity to discourse.
- Comparison to pronouns shows non-parallelism incompatible with BT.

## This Study

We monitored eye movements to pictures of dolls (see display) to determine the roles of Binding Theory (BT) and visual context on the reference resolution of reflexive (and pronominal) NPs.

Sample Instruction:

Look at Joe. Have Ken touch Harry's picture of himself/him

BT domain (D) where reflexive must find antecedent and where pronoun must not

We tested these predictions with two conditions.

- **Different Lead-in:** doll mentioned in lead-in ("look at X") sentence is different from the doll mentioned as subject of action sentence
- **Same Lead-in:** the lead-in doll and subject doll are the same

### Display

#### Different Lead-in Instructions

Look at *Joe*. Have *Ken* touch *Harry's picture of himself/him*

#### Same Lead-in Instructions

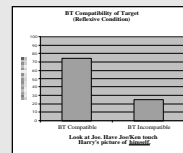
Look at *Ken*. Have *Ken* touch *Harry's picture of himself/him*

**Eye-tracking Binding** Runner et al (2000) established that eye-tracking methodology can replicate "basic BT" judgments in "neutral" context; this study extends this methodology to non-neutral contexts.



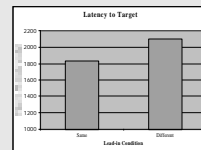
## Results

### Response (Target) Choice



The Initial Filter hypothesis predicts that potential referents not consistent with BT will not be chosen. However, 25.5% of the trials on the reflexive condition participants chose the BT-incompatible picture. This is consistent with the Multiple Constraints hypothesis.

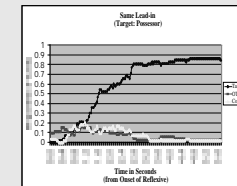
### Response Latencies



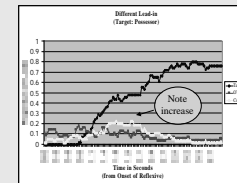
The Initial Filter hypothesis predicts no sensitivity to Lead-in on the reflexive condition. However, a marginally significant main effect of lead-in ( $p < .1$ ) is found. Response latencies are 269 ms slower in the Different Lead-in condition. This is consistent with the Multiple Constraints hypothesis.

### Time Course of Looks

The Initial Filter hypothesis predicts no looks to potential referents that are not consistent with BT. While there are always some looks to "competing" BT-incompatible potential referents (see Graph 1), in the Different Lead-in condition there is a noticeable increase in looks to the picture of the different lead-in doll (Graph 2). This sensitivity to lead-in is not predicted by the Initial Filter hypothesis but is consistent with the Multiple Constraints hypothesis.



Graph 1



Graph 2

## Conclusions

- Binding Theory may be one of several interacting constraints playing a role in the on-line reference resolution of reflexives.
- Lack of parallelism with pronouns may suggest that reflexives and pronouns are sensitive to additional and differing structural conditions on reflexives and pronouns.
- Future and in progress work addresses additional structural and pragmatic variables relevant to the on-line reference resolution of both reflexives and pronouns.