

Material Symbols

How cognition makes use of public language

Cognitive Consequences of language

1. Labeling and category formation
2. Structured sentences and expertise
3. Meta-cognition
4. The properties of groups (CitW Ch.5)

Labeling Augments Reality

- Categories (reducing the descriptive complexity of the world)

Upgrading the Chimpanzee Mind

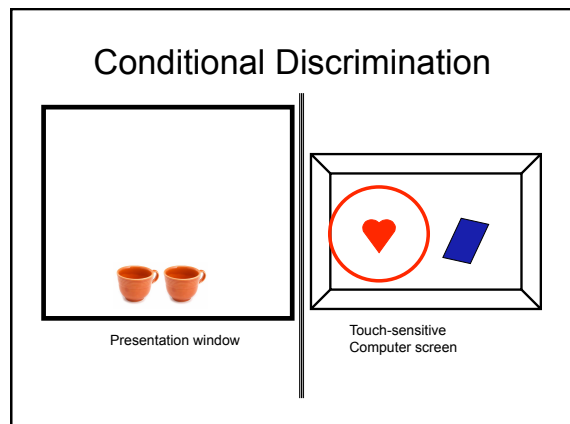
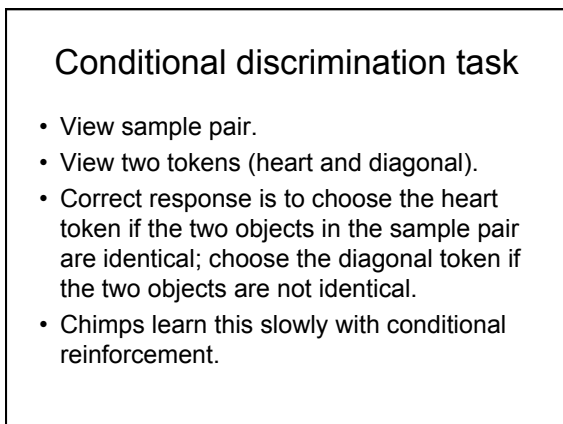
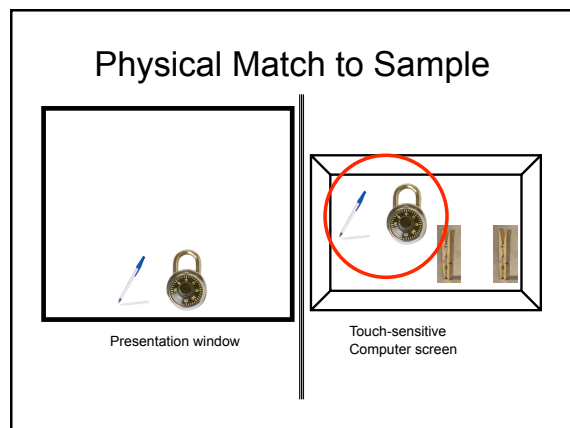
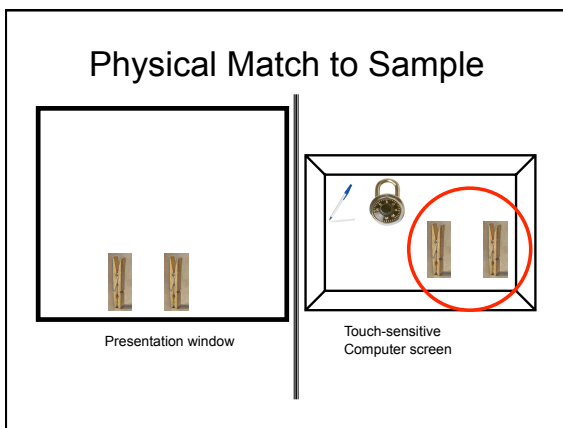
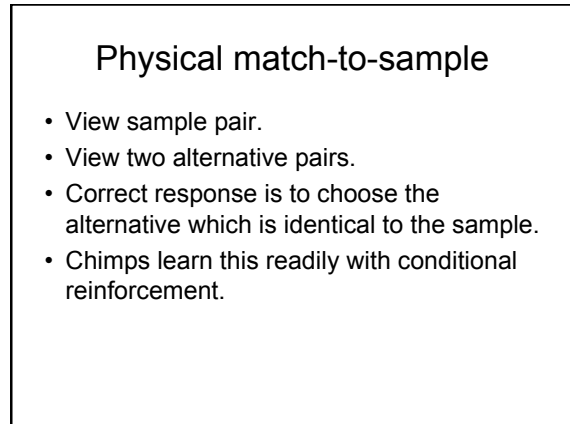
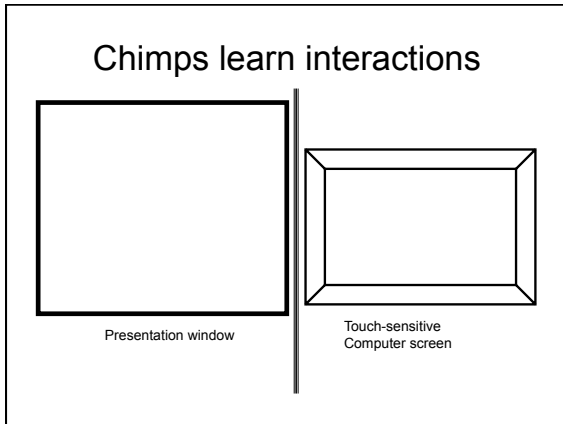
Based on Thompson, Oden and Boysen 1997
"Language naïve chimpanzees (Pan troglodytes) judge relations between relations in conceptual match-to-sample task."

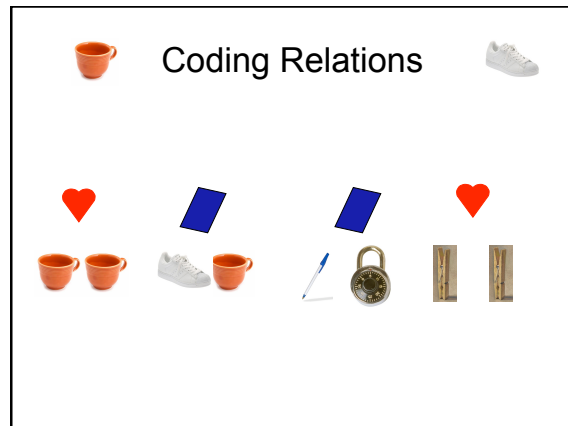
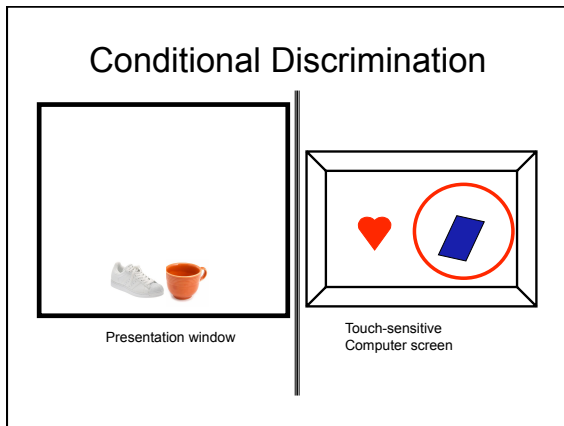
Why it is relevant here.

- A qualitative change of just the sort that is presumed to underlie the shift from pre-symbolic to symbolic reasoning could occur in a nonhuman primate as a consequence of a change in a cultural practice.

The pre-upgraded chimp mind

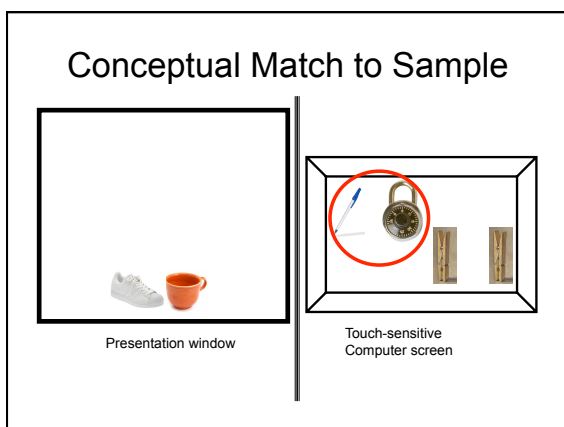
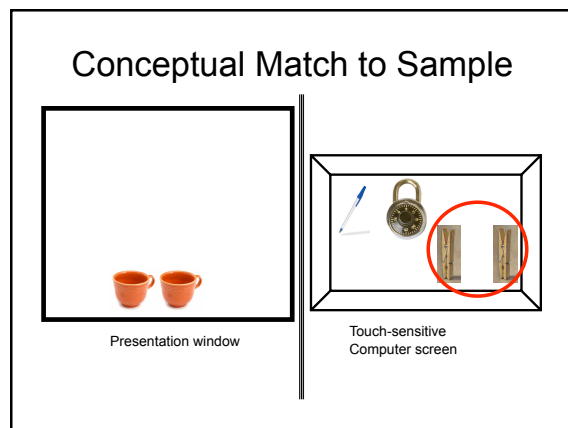
- Infant chimpanzees perceive similarities and differences between exemplars of identity and non-identity relationships, but they cannot use that ability to judge the equivalence of such relationships in a conceptual matching task.





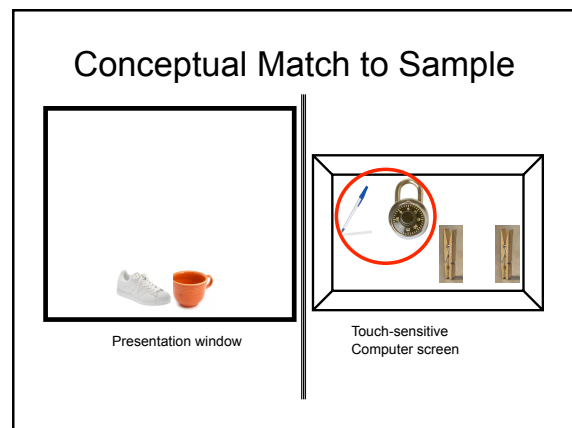
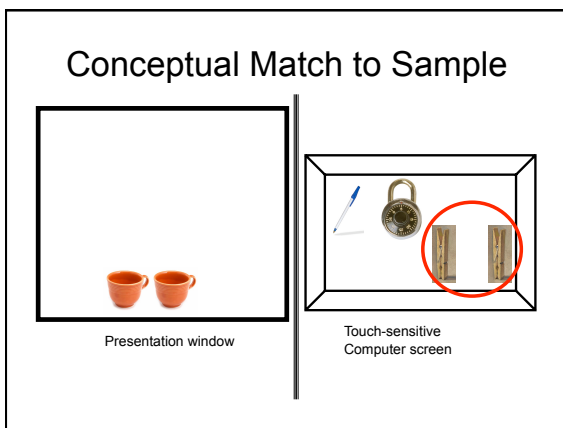
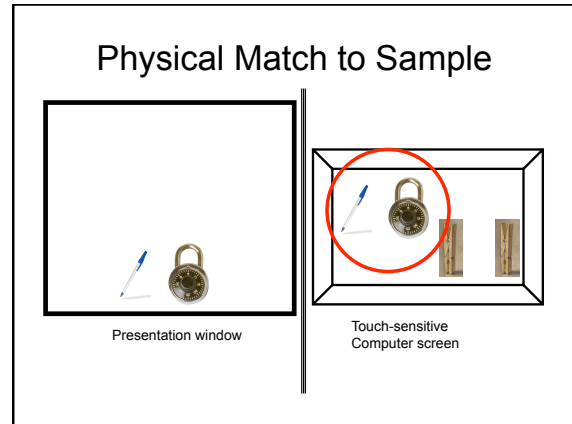
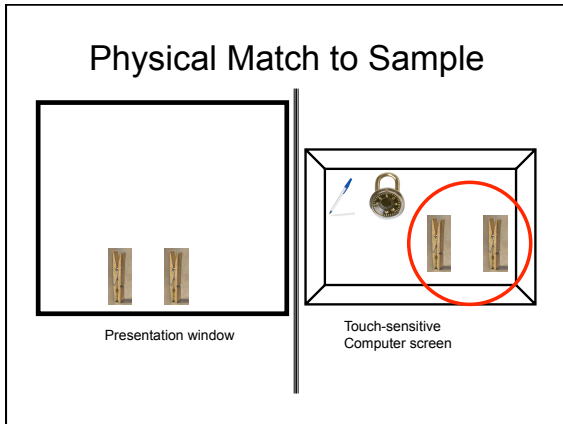
Conceptual match-to-sample

- View sample pair.
- View two alternative pairs.
- Correct response is to choose the alternative which has the same within-pair relation as the within-pair relation of the sample.
- Some language trained chimps can do this. And chimps who have had **conditional discrimination** training (but no language training) can also do it.



The experimental design

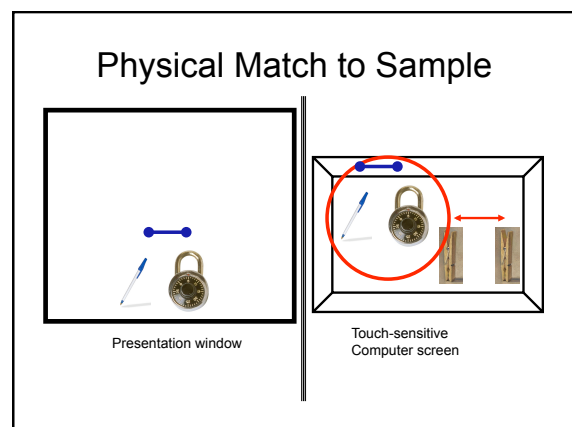
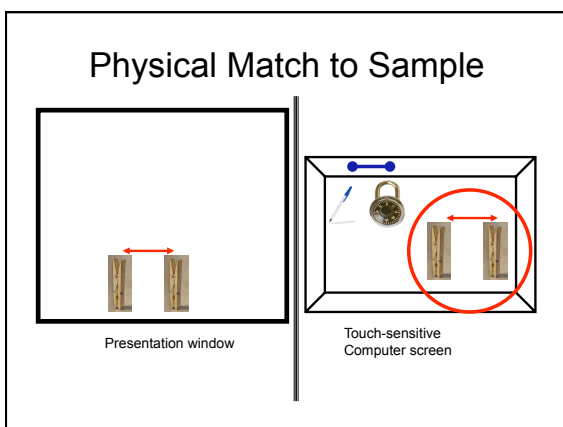
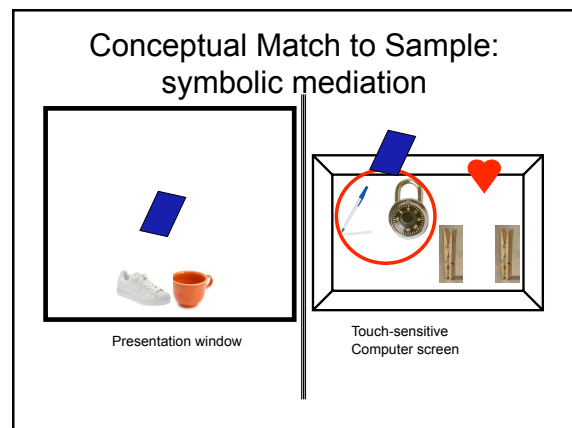
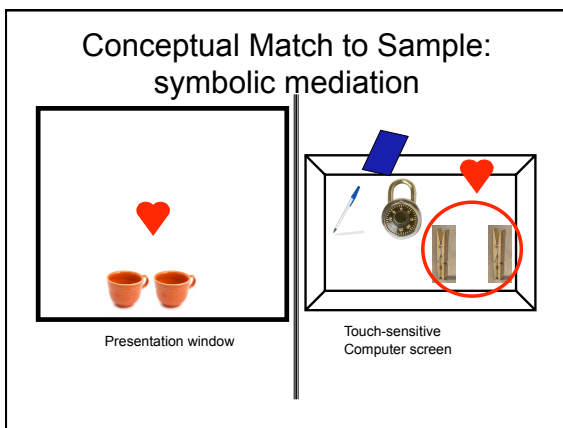
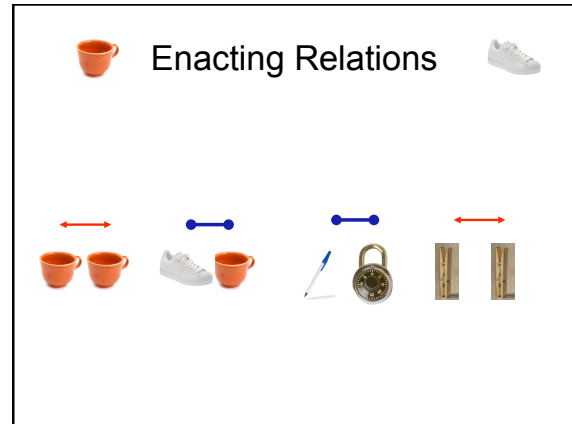
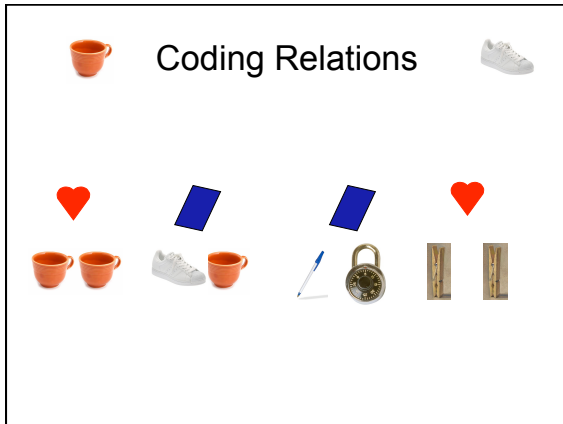
- Alternating blocks of
 - Physical match to sample
 - Conceptual match to sample.

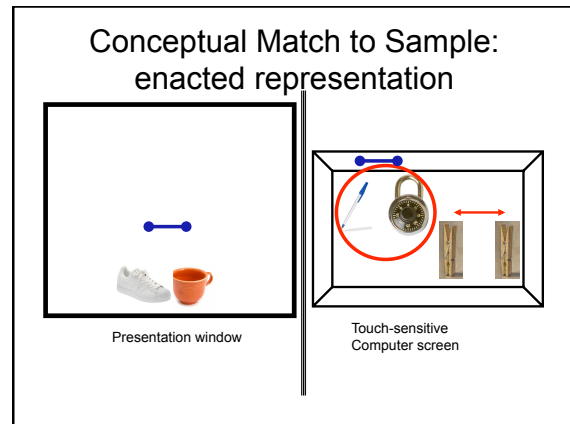
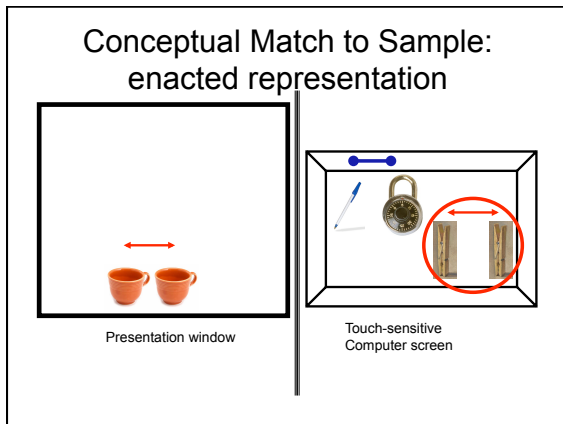


And the chimps that had
conditional discrimination training
can do it on the very first trial

Why?

- ### Conditional discrimination task
- Bring the practice of discrimination of identity/non-identity under control by making it part of the social interactions with the humans. *Learn to participate in new cultural practices*
 -
 - Choose one token for identical pairs and a different token for non-identical pairs. *Code relations using symbol-like tokens*





Upgrading nonhuman primate minds via cultural practices

- Either explanation of the upgrade process implies the orchestration of interactions of brain and body with the culturally organized social and/or material environment.
- The “upgraded” processes are a property of the interaction system: brain, body, world.

Models of language

- One view of language is that it is the output of a specialized machine.
 - Cultural practices set only the specific forms of language.
- Another is that language is a behavioral repertoire that draws on many capacities that were not evolved to serve language. Language as an organized bag of tricks.
 - Cultural practices organize the tricks in the bag of tricks in ways that produce the abilities we observe.

These models imply different differences

- If you assume the language as specialized machine position, then the difference between us and them must be that they lack some critical components of the language machine.
- If you assume the bag of tricks then it is possible that they have all the tricks, but lack the capacity to enter into the practices that orchestrate the relations among the parts that produce the ability.

The general principle

- If cultural practices mediate the relations between cognitive capacities (imagining trajectors, confirmation bias, conceptual blending ...) and high level cognitive abilities (sidereal calendars, non-instrumental navigation, deliberation, language ...),
- then cognitive capacities cannot be inferred directly from abilities,
- and the evolutionary value of capacities cannot be inferred from the utility of abilities.

Chimp Representation

- The Chimp's representational activities are embodied, multimodal, and temporally extended.
- The activity of bringing forth the thing that is represented (the relation) is organized by cultural practices.

Chimp symbol processing

- The chimps' behavior depends on being enculturated into certain cultural practices.
- The cultural practice of seeing hearts and diagonals "as" symbols that code relations creates a "new perceptual modality" in which abstract relations (relations among relations) can be "seen".
- But once that perceptual modality is trained, it might be usable without invoking the symbols.

Sculpting attention

- "... The language using agent is able (once the instructions are memorized or, in the written case, visually accessed) to engage in a simple kind of behavioral self-scaffolding, using the phonetic or spatial sequence of symbolic encodings to stand proxy for the temporal sequence of acts." StM p. 48

Domesticating the Mind

- "Encounters with words and with linguistic encodings act to anchor and discipline intrinsically fluid and context-sensitive modes of thought and reason." StM p. 53

2nd Order Dynamics Thinking about thinking

- "Consider the act of thinking about the conditions under which we think best and trying to bring them about." StM p.58
- "[language] emerges as a key cognitive tool by means of which we are able to objectify, reflect upon, and hence knowingly engage with our own thoughts, trains of reasoning, and cognitive and personal characters." p.59