

## Theory of Mind in Chimpanzees (according to Povinelli et al)



## Chimpanzee Minds:

Suspiciously Human? - Povinelli and Vonk 2003

- *Background: Theory of Mind*
  - We humans are often able to reason about what other people are thinking
  - For example, we modify some of our behavior in order to avoid evoking anger in others
  - Point: we are able to reason about the mental state of another person = “theory of mind”
  - Question: do chimpanzees also possess this “theory of mind”? That is, are chimps able to reason about the mental states of other chimps?

## Humans are “innate psychologists”

That is, we tend to interpret behavior of animals as well as humans in terms of mental states AND we assume that animals must do the same!

**Povinelli & Vonk:** but we should not allow this innate tendency to generalize or extrapolate (or anthropomorphize) blind us to different kinds of mental strategies that might be used by chimps (and other animals) in social interactions

## Alternative Explanation for Behavior

- Chimps are probably able to form **abstract representations of behavior** independent of any particular chimpanzee that performs the behavior
- For example, chimp can probably categorize “**threat display**” as a general type of behavior that any chimpanzee can, in principle, exhibit.
- Further, chimp can probably predict consequences (threatening chimp will charge, hit, etc)



## Alternative Explanation for Behavior

- Further, chimp probably able to modify its behavior according to the probability that a charge will follow a threat
- *However*, does this mean that chimp associates the occurrence of a “threat display” with a mental state of “anger”? That is, does chimp reason, “the other chimpanzee is charging at me and will hit me **because he is angry**”, or is the **last clause** absent from chimp’s thought process?



## Chimps vs. Humans

- The ability to form these **abstract representations** of behavior is present in the ancestor common to humans and chimpanzees
- *However*, the further ability to **reason about mental states** *may* have evolved as a **uniquely human capability**
- *Question to test*: do chimpanzees have this additional ability to construe behavior in terms of mental states? Do they have a “**theory of mind**”?

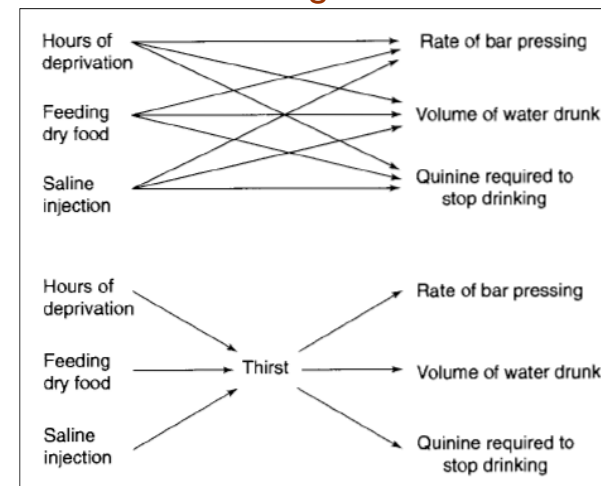
## Intervening Variables

Povinelli & Vonk are not opposed to intervening variables such as the hypothesized Theory of . They agree that humans use such a mechanism. They just question whether chimps do the same, or instead work from behavioral abstractions.

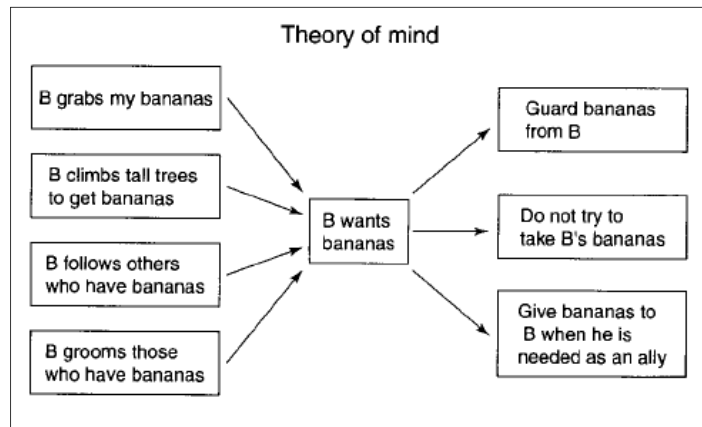
“The skeptic is wrong to suggest that the only alternative to attributing a theory of mind is to accept the tenets of behaviorism (i.e., positing that the chimpanzee has no mental representations), but the believer's invocation of parsimony (economy of expression) constitutes an error in logic: for each anecdotal instance of deception in which a chimpanzee might have been reasoning about the mental states of others, the agent must also have possessed a corresponding behavioral abstraction that could have done the same work”.

Povinelli & Vonk 2003

## Intervening Variables



## Intervening Variables



## Theory of Mind in Chimpanzees (according to Tomasello, Call et al)



Call & Tomasello (2008):

### Does the chimpanzee have a theory of mind? 30 years later

Premack & Woodruff (1978) first asked this question.

In earlier review (1997), Tomasello & Call came to the pessimistic conclusion that chimps do not understand the psychological states of others. They can predict the actions of others but “do not go beneath the surface to an understanding of the goals, perceptions, knowledge and beliefs that guide action”.

However, in the present review C & T say: “The story since the late 1990s has been one of experimenters finding **better ways** to tap into what chimpanzees know about the psychological states of others – and **so getting many more positive results**. In most cases this has been guided by attempts to model the experiments more closely on situations that chimpanzees routinely encounter in their **natural environments**, for example, presenting them with problems **not** in situation in which **must cooperate** with others but, rather, in situations in which they **must compete** with others.

Call & Tomasello (2008):

### Does the chimpanzee have a theory of mind? 30 years later

Research examples illustrating what the chimp understands and what he doesn't:

- ✦ Povinelli & colleagues 1995; 1996
- ✦ Hare, Call & Tomasello 2006
- ✦ Bräuer, Call & Tomasello 2007
- ✦ Kaminski, Call & Tomasello 2008



Michael Tomasello

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